DOMESTIC ENGINEERING

PLUMBING • HEATING • AIR CONDITIONING • APPLIANCES

Guns . . . or Plumbing and Heating?

OHIO STATE UNIVERSITY
JUN 8 - 1951
LIB

We need maximum production of both, says the NPA, if we are to attain our full strength in the present emergency . . . see special message, p. 84

JUNE • 1951

In Washington last week, officials of the National Production Authority studied results of a Domestic Engineering survey (above), which (1) proved manufacturers in our industry can maintain production of plumbing and heating while, at the same time, making direct war items, and (2) gave NPA a factual basis for planning plumbing and heating production under the new Controlled Materials Plan. Shown are Paul B. Holmes, chief of the Heating Branch, Building Materials Division; George Hoffman, consultant; Charles P. Redick, deputy director of the BMD; Hugh Woll, chief of Plumbing Branch, and Ed Rowe, consultant.

Boilers? Sure!! but tanks too!

"No let-down in boiler production insofar as materials permit" is the Fitzgibbons watchword. New large plant facilities and adequate personnel are being *added*, exclusively for defense production. Present facilities suitable only for boiler production and personnel will continue to serve the thousands of builders, architects, heating contractors and jobbers who demand "the best in steel boiler heat"— The Fitzgibbons Boiler.®

Reprinted from
DOMESTIC ENGINEERING March, 1951

LIMITED PRODUCTION facilities are not likely to be the cause of product shortages in the foreseeable future, according to several prominent manufacturers at the heating and ventilating show last month in Philadelphia.

Fitzgibbons Boiler Company, for example, announced the construction of a new plant to turn out defense orders, and at the same time revealed a determination to use existing facilities as long as possible for the full scale production of civilian lines.

Paul K. Addams, president of Fitzgibbons, told DOMESTIC ENGINEERING that, unlike the last war his company intends to remain in the boiler business.

"The economy of this country must be maintained at the highest levels, and the need for comfort, convenience and public health involved in the adequate heating of homes, apartments, schools and other buildings, is just as important a phase of the defense economy as the production of tanks, guns, ships and planes," Mr. Addams said.

OSWEGO PALLADIUM-TIMES, WEDNESDAY, JANUARY 17, 1951 PAGE THREE

FITZGIBBONS TO BUILD TANK HULLS

Plans To Erect Plant Addition To Aid Defense

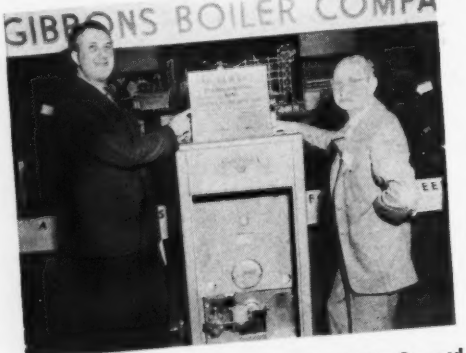
Expansion of plant and facilities of the Fitzgibbons Boiler Co., Inc., in Oswego, by construction of additional buildings to provide about 90,000 square feet of additional production space for fabrication and assembly of welded steel and armor plate hulls for a new type medium combat tank for U. S. Army Ordnance, was announced by President Paul K. Addams, Wednesday noon.

600 More Employes

Ultimately from 600 to 800 additional employees with the required skills will be needed to carry on the program. This employment will be in addition to the employees required to sustain the normal boiler and plate products business of the corporation in the existing building. It is the company's intention to remain in the boiler business.

The economy of this country must be maintained at the highest levels and the need for comfort, convenience, and public health involved in the adequate heating of homes, apartments, schools and other buildings, is just as important a phase of the defense economy as the production of tanks, guns, ships and planes, he said.

Above: Typical of the trend already underway in our industry, the Fitzgibbons Boiler Co. is building new production facilities to turn out defense orders. Unlike the last war, this company's existing plant will be devoted to civilian production.



Paul K. Addams, president of Fitzgibbons Boiler Co., and John Collette, are shown with a new gas-fired unit, unveiled for the first time at the Philadelphia show.

Fitzgibbons Boiler Company, Inc.

101 PARK AVENUE, NEW YORK 17, N. Y.

Manufactured at: **OSWEGO, N. Y.** *Sales Branches in Principal Cities*

The "WORST WINTER IN YEARS"

has lined up thousands of customers for

VOGEL

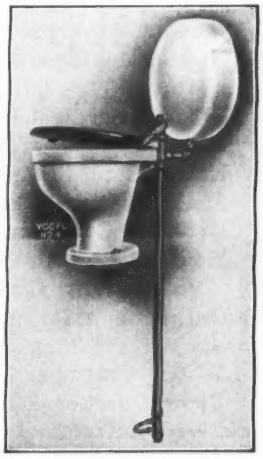
FROST-PROOF CLOSETS and HYDRANTS

The past winter was one of the worst on record, but it has proved to thousands of people and institutions the importance of closets and hydrants that can be depended on, no matter how cold the weather gets.

There are thousands of prospects—on farms, in schools, institutions, comfort stations, public and semi-public places—who are waiting to buy the dependable Vogel Frost-Proof Closets and Hydrants. More than a million of these original Closets and Hydrants have been sold.

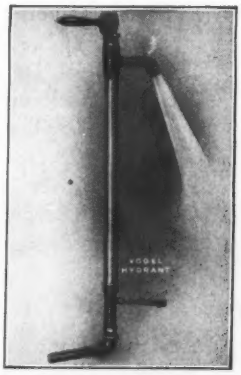
VOGEL No. 4 FROST-PROOF CLOSET

Will operate efficiently no matter how low the temperature may go. Minimum of moving parts and rugged construction mean long dependable service—and satisfied customers.



VOGEL FROST-PROOF HYDRANT

On farms, in dairies, garages, service stations, industrial plants and many other places, a sure dependable source of running water is a necessity, especially in zero weather. The Vogel Frost-Proof Hydrant is the answer, for it will never freeze when properly installed. This feature makes it especially valuable as a fire hydrant.



Users like the Vogel Hydrant because it never fools them. When they see the handle in an upright position they know the water is surely shut off. Any hydrant that does not positively shut off will waste water in Summer, and is sure to freeze in Winter.

VOGEL PATENTED PRODUCTS

JOSEPH A. VOGEL CO., WILMINGTON 99, DELAWARE

DOMESTIC ENGINEERING

VOL. 177, NO. 6; WHOLE NO. 2208

JUNE, 1951

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Published Monthly by Domestic Engineering Co., 1801 Prairie Ave., Chicago 16, Ill., U. S. A.

Subscriptions: $3.00 per year. Foreign, other than Canada, $5.00. Current copies—30c each; Back copies—60c each. Entered as second class matter on September 26, 1932, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879. Additional entry Milwaukee, Wis. Copyright 1951, by Domestic Engineering Co. Member Audit Bureau of Circulation.

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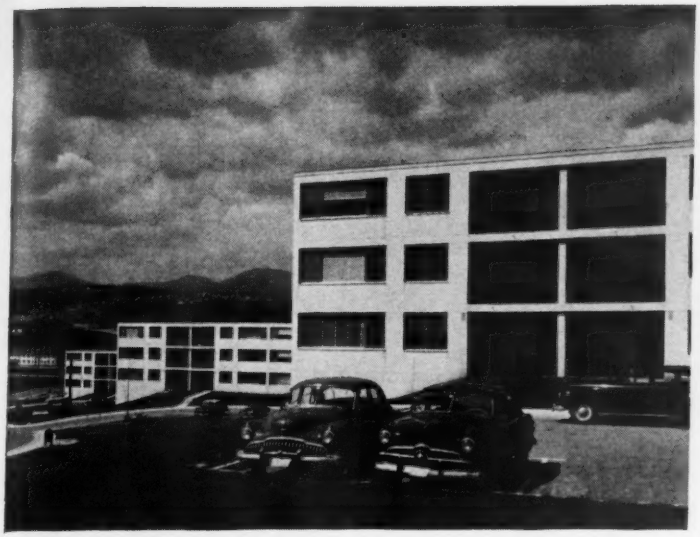
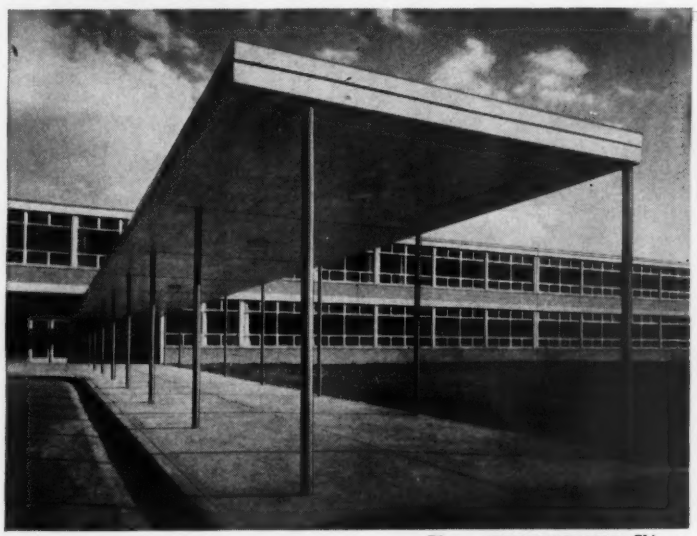
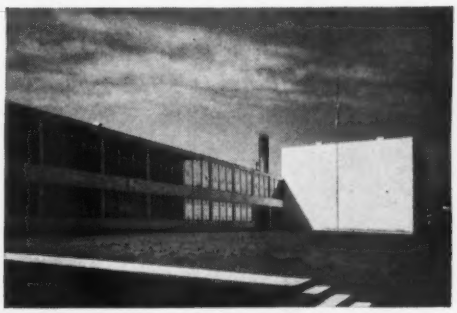


LEFT: *Attractive, multistoried apartments provide modern homes overlooking wooded hills.* **ABOVE:** *Exceptionally fine two-family garden apartments have convenient carports.*

OAK RIDGE, U.S.A., WORLD'S 8th WONDER

IN TENNESSEE'S HILLS THE PATTERN OF DESTINY IS BEING SHAPED





LEFT: *Ultramodern educational facilities are available to Oak Ridge youth in this fine high school and,* **RIGHT:** *Elementary schools are designed in contemporary manner.*

Photos, HEDRICH-BLESSING, Chicago

Only a few years ago the quiet of the Tennessee hills was shattered by construction activities unprecedented in all history. The world's No. 1 atomic energy community was being created. With few exceptions living facilities were temporary, pending community development according to a Master Plan. Since war's end architectural and engineering progress has been transforming the pioneer Oak Ridge into a model which may well influence planning for other defense communities throughout the nation. **SLOAN** is especially proud that its Flush Valves were selected for Oak Ridge—another example of preference that explains why . . .

more ***SLOAN Flush VALVES***
are sold than all other makes combined

SLOAN FLUSH VALVES are specified for closets, urinals, service sinks, hospital sterilizers, etc., and once regulated to the requirements of the fixture, will deliver a uniform flush at all pressures between 10 and 100 pounds.

Put the new CRAFT Shower Cabinet Catalog to work building sales, volume and profits for you—write for your free copy today!

CRAFT SHOWER CABINETS

FIRST WITH MEN WHO KNOW

Craft Shower Cabinets are in greater demand now than ever before. The reason? *Quality Materials*, *Quality Workmanship*, and *Quality Styling* make them the outstanding buy in shower cabinets today. All Craft Showers carry a special Guarantee. Models for every type of installation. Glass doors and vitreous porcelain enamel or Craft Stone receptors available for all models.

CUTLER METAL PRODUCTS CO.
1025 LINE STREET, CAMDEN 3, NEW JERSEY
SPECIFY CRAFT—IT'S A WHALE OF A STALL SHOWER

INSTALL SPEEDWAY

INSTALL SPEEDWAY flexible supplies and SAVE TIME

Flexible, easy to offset

"rough-in" not necessary
Will adjust to any offset

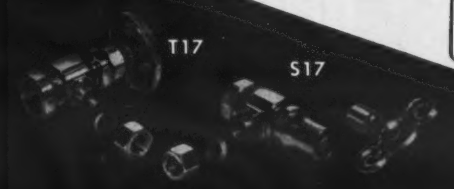
Metal-to-metal connection

Permanent lead gasket eliminates rubber washer failure and blowouts

DON'T use rubber or leather washers. Note the permanent lead gasket.

Packaged complete for installation

Makes hard-to-get-at corners easy to work in



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You and Berger can make a winning team. The complete Berger Line of high-quality Steel Cabinets for Kitchens is *your* line. For over 13 years Berger Steel Cabinets have been designed for and sold exclusively through *the plumbing trade.*

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APPROVED BY QUALITY TESTED STEEL KITCHEN CABINET INSTITUTE "FOR YOUR PROTECTION"

BERGER® STEEL CABINETS FOR KITCHENS

REPUBLIC STEEL

P P
Production Plus*

The same production know-how, mechanized plant facilities and fine craftsmanship which have made the Price-Pfister line of plumbers' brass famous for quality all over the world, has been assigned to the additional task of producing materiel for our nation's defense effort to meet the current emergency. Temporarily this may cause shortages of certain Price-Pfister items but we feel sure you will agree that in such critical times our nation's security takes precedence.

* **MOLDING & POURING DEPT.**

A completely mechanized department where rigid controls assure smooth finish castings, inside and out, as well as uniform thickness of brass. Precision production at Price-Pfister means this extra quality at competitive prices.

• LOOK FOR THE P-P • IT MEANS PRECISION PRODUCTS •

P P Price Pfister

BRASS MANUFACTURING COMPANY

3011 HUMBOLDT STREET • LOS ANGELES 31, CALIFORNIA

ESTABLISHED 1910

....an advanced idea in 1946

increasingly important in 1951

This beautiful, modern store of Stephen Lesak & Sons, Chicago, demonstrates the attractiveness of an Open Front Store.

This installation so clearly pictures the basic elements of a modern plumbing and heating store that it was featured in a full color photographic mural at the N.A.M.P. Convention.

Since Crane Co. initiated the Open Front Store *Program in 1946, practically every responsible* influence in the industry has joined the movement to promote better retailing facilities. Today thousands of Plumbing and Heating Dealers have made effective progress in improving their selling operations through better store design—better merchandise display—better selling techniques.

The basic principles of this increasingly important store program are contained in a booklet prepared by Crane Co., "Sales Conditioning." If you have not received a copy, ask your Crane Salesman for one.

CRANE CO. GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO 5

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PLUMBING AND HEATING

"Quiet" POWER

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Many of America's leading products depend upon the quiet power of Emerson-Electric Motors to drive their operating mechanisms. These products also benefit from the quality construction and dependability of Emerson-Electric Motors, which are equally important factors in long-term customer satisfaction.

The accumulated experience in designing and manufacturing Emerson-Electric Motors, dating from the pioneering days of 1890 to the present, is yours to command without obligation. Ratings 1/20 to 5 h.p. Your inquiry is invited.

THE EMERSON ELECTRIC MFG. CO.
St. Louis 21, Mo.

JET PUMP MOTORS

Build dependability into your Jet Pumps by specifying Emerson-Electric Jet Pump Motors (⅓ to 1 H.P.) to assure user satisfaction and more profitable sales. Emerson-Electric standard motors are made in ratings ⅓ to 1 H.P. single-phase capacitor-start, induction run; 1½ H.P. single-phase Repulsion-start Induction-run; and polyphase motors in 1 to 5 H.P. For complete information, write for Bulletin No. 161.

EMERSON ELECTRIC
MOTORS • FANS APPLIANCES

Ready for you now
SAY EVERYBODY
PERSONAL SELLING
WHO YOU ARE
WHERE YOU ARE
WHAT YOU HAVE TO SELL
LET PEOPLE KNOW THROUGH
Packaged

THE AMERICAN-Standard BETTER RETAILING PLAN

A comprehensive step-by-step program to help you build a bigger heating and plumbing business

● The American-Standard Better Retailing Plan is the biggest thing in the industry.

Here is a program that covers every phase of successful retailing as it applies to the heating and plumbing business. The Plan shows you how to develop a modern store . . . how to get better advertising results . . . how to increase your personal selling effectiveness.

To participating retailers, American-Standard offers substantial discounts for products displayed in their showrooms . . . special cooperative advertising for local newspapers . . . a packaged direct mail program, including attractive illustrated literature and selling letters . . . trade-mark advertising in telephone directories, and many, many other important selling aids—all designed with the single idea of helping you get a larger share of the heating and plumbing business in your community.

For complete details of this resultful plan contact your wholesale distributor immediately

If you want to be counted in and get complete details of the Plan, contact your wholesale distributor immediately. The entire presentation takes only an hour or two. After you have seen and heard it, you'll agree that you couldn't have spent the time to better advantage! **American Radiator & Standard Sanitary Corporation,** P. O. Box 1226, Pittsburgh 30, Pennsylvania.

AMERICAN-Standard

First in heating . . . first in plumbing

Serving home and industry

AMERICAN-STANDARD · AMERICAN BLOWER · CHURCH SEATS · DETROIT LUBRICATOR · KEWANEE BOILERS · ROSS HEATER · TONAWANDA IRON

A Big Hit!

THE CHASE COPPER WATER TUBE CARTON

Now Chase Copper Water Tube comes in compact, sturdy cartons . . . easy to identify . . . easy to store.

In many sizes, the tubes are packed more than one coil to a box to reduce the carton disposal problem. And because it is clearly marked, you can pick your Chase Copper Water Tube Carton out of stock easily and quickly.

This is just another Chase service in line with the Chase tradition of providing the best in brass and copper.

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SĀF-T-HOT

SAFE . . . on every count. 100% automatic safety cut-off. Cool outer tank walls, cool floors beneath heater. Safe for years of dependability.

Engineered right to a ***T*** for outstanding good looks, performance, economy, all through the price range.

HOT water . . . plenty of it, FAST. Extra efficient burner heats full tank (35 gal. size, for example) in 55 minutes.

SOLD ONLY THROUGH THE PLUMBING TRADE

THE HEDGES LINE

M. M. HEDGES MANUFACTURING CO., INC.
CHATTANOOGA, TENNESSEE
• WATER HEATER SPECIALISTS •

Sell Westinghouse!

Westinghouse Water Coolers are the

BLUE CHIP LINE OF THE INDUSTRY

. . . of course, it's electric!

Mobilization for the defense effort will require new facilities, and the expansion of present ones—many of which will carry D. O. Ratings for their water cooler requirements. Many of these jobs are now on the drawing boards of industrial architects. *NOW* is the time to contact them to get your share of this vital market.

Remember, Westinghouse has a cooler for every need! Ten Coolers are available, including Bottle and Compartment, types, plus Air-Cooled, Water-Cooled and Explosion-Proof Models. So sell the Cooler that already has high acceptance from government and industry—the Cooler line that is Built Right—Priced Right—And Amazingly Free from Service.

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Electric Appliance Division • Springfield 2, Mass.

FREE CATALOG
Westinghouse Electric Corporation
Mansfield, Ohio
Please send me one.
Name_____
Street_____
City & State_____

ODE

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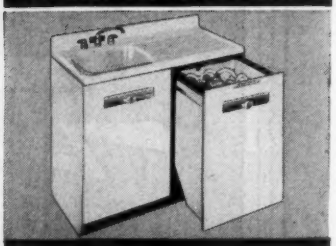
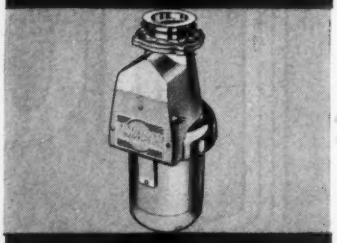
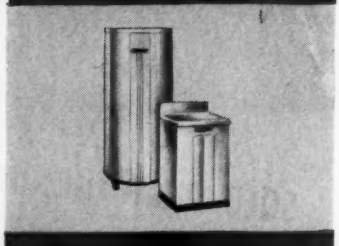
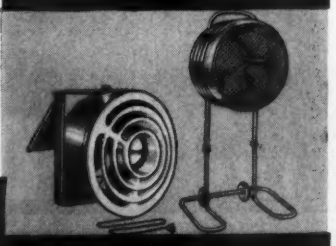
Other Popular Westinghouse Plumber Business-Boosters*

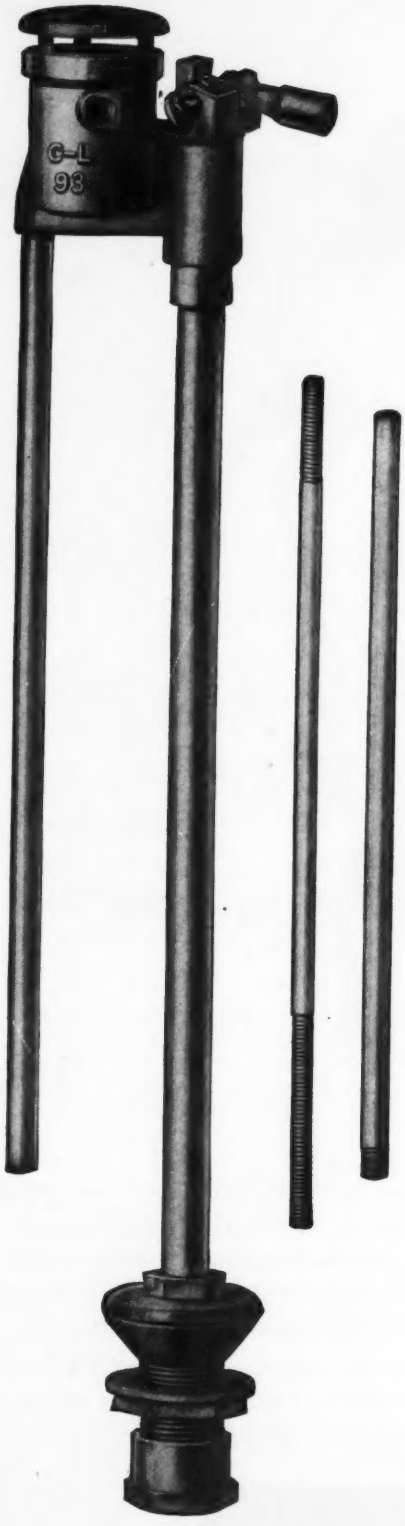








SURE Westinghouse



Approved Anti-Siphon

INBRACO

FLOAT VALVE

The accompanying illustration shows our *NEW* No. 93 Approved Anti-Siphon Float Valve equipped with rubber "O" Ring Plunger Packing and *Nylon* seat.

This fitting is silent in operation—requires no adjustment—snap action closing under high pressure.

Packed in individual box with rod and refill.

Individual security INSURES FREEDOM and LIBERTY. & Social Security leads to Regimentation and LOSS OF LIBERTY.

It's a privilege to live in a Republic.
Only God can help the people who live in Democracies.

Louis J. Johnson
President

THE INDIANA BRASS CO., Inc.
FRANKFORT - - - - INDIANA

* DRESS BY L'AIGLON. PHOTO COURTESY OF SAGE-ALLEN & CO., INC., HARTFORD, CONN.

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Handsome is as handsome does, T & B Convectors are efficient in performance, economical in operation. Quick to respond to thermostatic control, heat is transmitted from boiler to rooms in a hurry and that means fuel cost savings...the constant, gentle circulation of room air provided by convection heating means even temperatures from floor to ceiling, no stratification, no drafts.

When you recommend and install T & B Convectors, you can be sure of complete customer satisfaction, a job *you* can be proud of!

ASK YOUR JOBBER TODAY

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ENGINEERED PRODUCTS FOR HEATING, [redacted] VENTILATING

7TB81

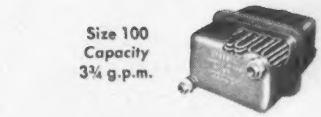
YOU CAN SUPPLY ALL ...BETTER...

with GENERAL Tankless Heaters

Your choice of eight sizes of General Tankless Water Heaters permits you to meet every hot water need of customers and prospects . . . regardless of their size of family. It assures *plenty of clean, continuous hot water for all* . . . impossible to achieve adequately or efficiently with any "all-purpose" unit, such as an internal tankless heater.

General Tankless Water Heaters are designed for all automatic-fired boilers. Especially advantageous on forced-circulation hot water heating systems — give faster circulation. Seamless copper heating coils . . . cast iron shell. Easy to handle and install. No tank to fuss with . . . no complicated piping.

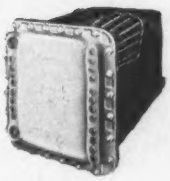
Take the easy way to insure the right-size hot water supply for every job . . . select from General's broad line. Write for illustrated Catalog 19. General Fittings Co., 125 Georgia Ave., Providence 5, R. I.

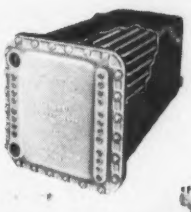

Size 100
Capacity
3¾ g.p.m.

Size 101
Capacity
5 g.p.m.

Size 102
Capacity
8 g. p.m.

Size 102A
Capacity
12 g.p.m.


Size 103
Capacity
15 g.p.m.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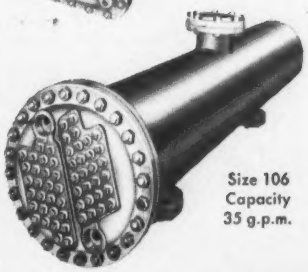
Capacity
20 g.p.m.


Size 106
Capacity
35 g.p.m.

NEW GENERAL 500
ALL COPPER UNIT

Family-size tankless heater that weighs less than 1/3 as much as conventional tankless heaters. Non-corroding copper shell, insulated with fiberglass. Seamless copper tubing. Easily drained. Capacity 4 g.p.m.

GENERAL

TANKLESS AND INDIRECT
WATER HEATERS AND HEATING SPECIALTIES

HOW DO YOU KNOW . . . . it's the RIGHT coupling?

One way, just refer to CAPITOL'S new, up-to-date Coupling Specification Sheet—which is yours for the asking.

Couplings are *different*—there are more than thirty different types. The right coupling in the right place means long, trouble-free service. The Capitol Coupling you specify is made for the job—this means top performance under exacting conditions.

Write today for your copy of Specification Sheet #451.

CAPITOL
MFG. & SUPPLY CO.
COLUMBUS, OHIO

COUPLINGS — NIPPLES — UNIONS — RADIANT HEAT FITTINGS
FURNACE COILS — WELL SUPPLIES — STEEL PIPE FITTINGS

Temperature Hazards

Pressure relief is basic protection for domestic hot water supply systems. BUT PRESSURE RELIEF ALONE IS INADEQUATE because tanks and heaters can be dangerous even at normal pressures. After water has reached 212°, it is in the emergency zone. Because all domestic hot water supply systems must operate under pressure, the water, therefore, has an opportunity to store up heat energy. In order to be safe, this heat energy must be discharged from the tank at a greater rate than the firing means can generate it.

	PRESSURE LBS. PER SQ. INCH	TEMPERATURE AT BOILING	FT. LBS. ENERGY LIBERATED
	0	212.0	—
DANGER ZONE	10	239.5	479,500
	30	274.0	1,305,000
	50	297.7	2,021,900
	70	316.0	2,642,000
	90	331.2	3,138,400

COMPARISON OF EXPLOSIVES

1 LB. BLACK POWDER GIVES 960,000 FT. LBS.
1 LB. SMOKELESS POWDER GIVES 1,260,000 FT. LBS.
1 LB. NITROGLYCERINE GIVES 2,000,000 FT. LBS.

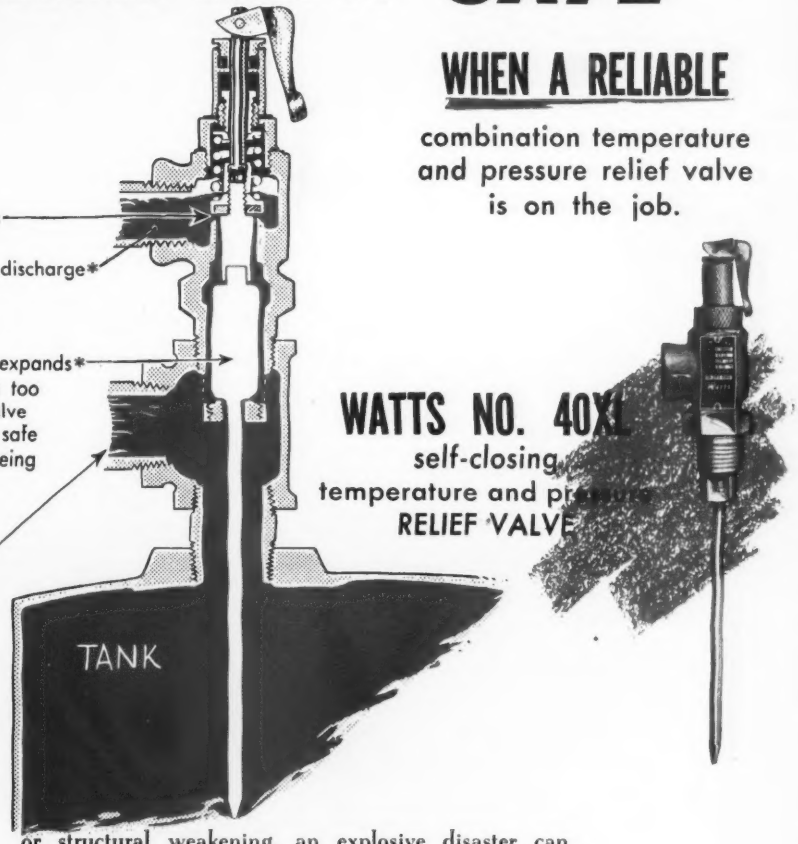
DOMESTIC HOT WATER TANKS AND HEATERS ARE.. SAFE

WHEN A RELIABLE

combination temperature and pressure relief valve is on the job.

Here's why..

Note that the valve disc is opened* by the expanded thermostat. This allows a BTU LIQUID (temperature) discharge* at a greater BTU capacity than the firing means can generate. The sensitive thermostat responds to excessive temperature conditions. It expands* to open the valve when the water is too hot, and contracts to self-close the valve after the tank water is cooled to a safe temperature, as if hot water were being drawn.



WATTS NO. 40XL
self-closing temperature and pressure RELIEF VALVE

When superheated water is confined in a tank it cannot explode, but, nevertheless, all of the latent heat energy is there LURKING. But - - - if the tank should rupture, as many do, because of heat weakening, physical deterioration from water conditions or structural weakening, an explosive disaster can result. Likewise, a stick of dynamite will not explode if the fuse isn't ignited, but the explosive power is still in it. Therefore, you can be sure that a domestic hot water tank or heater is safe when a reliable temperature and pressure relief valve removes the explosive force above 212°.

WATTS REGULATOR COMPANY, LAWRENCE, MASSACHUSETTS

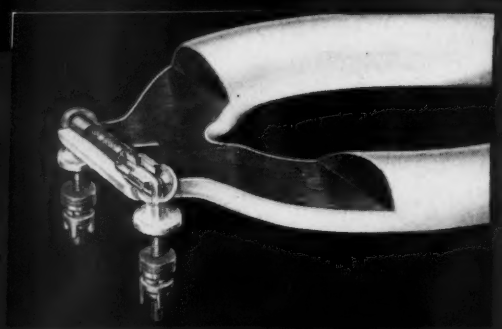
Where Strength *is called for*

No. 202
Church COREX Seat
In black or white

When the job calls for strength to stand hard use — even abuse — the Master Plumber who recommends COREX® Seats does so with complete confidence that his customer will *remain* satisfied!

COREX is a special composition, molded over a core of hardwood fibrous chips, under tons of pressure, into a homogeneous unit whose toughness and resilience defy fracture, chipping, cracking, warping or deterioration.

For school, hospital, factory and all sorts of industrial and institutional installations, it pays to sell COREX.



The heavy brass insert imbedded continuously across the back of the COREX Seat, and *locked* into the molded core, absorbs any stress, strain or shock.

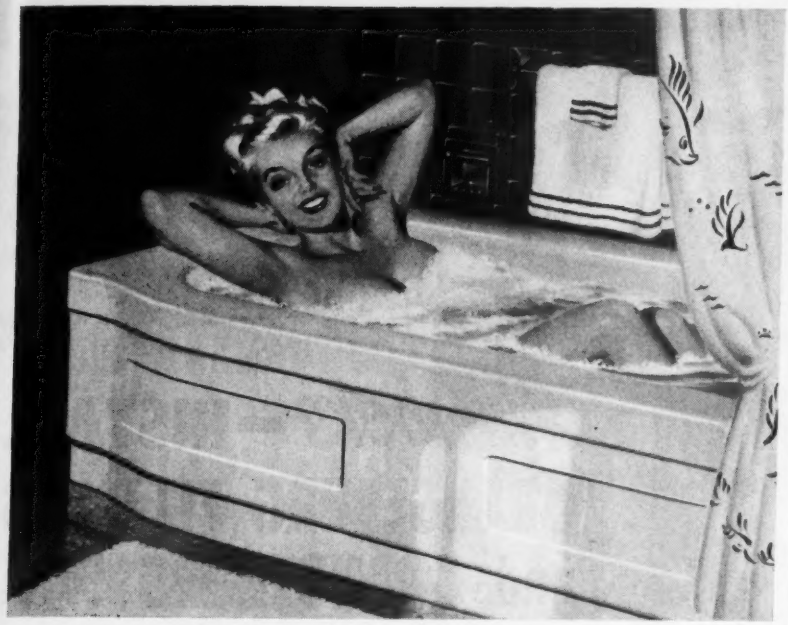
Solid construction, flat bottom, and special non-spill cut-out at rear of hole make COREX completely sanitary, easy to keep clean.

Church Seats

"THE BEST SEAT IN THE HOUSE"

C. F. CHURCH MFG. CO., HOLYOKE, MASS.

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON



There's never been such a tubful of features!

- Only steel tub with sales-building Lazy-Back feature!
- Acid and stain resistant porcelain enamel at no extra cost!
- Heavy gauge steel for ample rigidity, proper "set"!
- Smooth bottom for safety and easier cleaning!
- Raised flanges to prevent water seepage!
- Far lighter than old-fashioned tubs!
- Available in 4 colors plus white!

Here's why: Years of experience in the handling of steel have resulted in beautiful bathtubs only Murray can make! Yes, Murray's full knowledge of this metal combined with a long manufacturing background in the automotive field has made the high-quality, Lazy-Back tub possible.

Easier to install! A Murray tub only weighs about 130 pounds. Both you *and* your customers save on cost of handling!

And that's not all! There's a whole new line of plumbing units made the same fine way. Lavatories . . . wonderfully-styled, richly-coated with acid and stain resistant porcelain enamel. Flat Rim Sinks, three models, double and single sumps—ideal for modern, built-in installations. Roll Rim Sinks for kitchens, double and single drain boards and sumps. Sizes include 54", 66", 42" units.

• • •

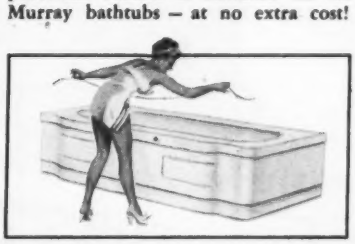
Save on warehousing! Tubs can be stacked . . . you use less of expensive warehouse space. You save on trucking, too . . . they're lighter to haul.

MURRAY features SELL!

MURRAY quality is detected by your customers at the very first glance. Then you show them the reclining comfort-angle found only in Murray-made steel tubs. That Lazy-Back feature alone can clinch sales!

MURRAY bathtubs have raised flanges that always assure a built-in job. Never any water seepage from splashing youngsters!

MURRAY supreme quality acid and stain resistant porcelain enamel is standard on all Murray bathtubs — at no extra cost!



MURRAY tubs all have smooth, safe, quick-draining bottoms! And the five-foot bathtubs actually have 3 inches more inside space than old-fashioned kind. Sizes include 4½ and 5-foot recess.

NO ONE MAKES BATHTUBS LIKE

MURRAY

THE MURRAY CORPORATION OF AMERICA • HOME APPLIANCE DIVISION • SCRANTON, PA.

Plumbers—INSTALL ORANGEBURG FITTINGS and ORANGEBURG PIPE

MORE PROFITS! BETTER JOBS!

You link one good profit-maker to another by installing Orangeburg's Root-Proof Team . . . Orangeburg Pipe with the new Orangeburg Fittings. You do an even better job for the customer, make better profits for yourself.

MADE OF FAMOUS ORANGEBURG MATERIAL

Orangeburg Fittings are precision-made from Orangeburg material . . . famous for toughness, resiliency and durability.

Complete Installations . . . No Cement, No Compounds, No Caulking or Adapters

Now you can make a complete installation with Orangeburg Pipe and Fittings alone . . . without any of the delays incident to using cement, compounds, caulking or adapters. Orangeburg Bends and Wyes are joined like Orangeburg Pipe . . . with the famous Orangeburg Taperweld® Joints . . . permanently root-proof and leak-proof. They bring your costs down, your profits up.

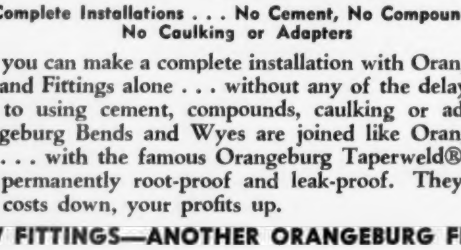
NEW FITTINGS—ANOTHER ORANGEBURG FIRST

Orangeburg . . . *first* in modern sewer pipe manufacture and installation . . . is again *first* with fittings specially designed for Orangeburg Pipe. Orangeburg Fittings . . . like Orangeburg Pipe . . . will help you build customer good will. They all carry the famous Orangeburg Trademark.

ORDER BY CATALOG NUMBERS

Be sure every order to your Orangeburg Distributor specifies Orangeburg Fittings by Catalog Nos. below—all for 4-inch Orangeburg Pipe only.

ORDER PLENTY OF ORANGEBURG FITTINGS FROM YOUR ORANGEBURG DISTRIBUTOR NOW!



¼ Bend
CAT. No. 517

⅛ Bend
CAT. No. 516

Wye
CAT. No. 518

ORANGEBURG MANUFACTURING CO., INC., ORANGEBURG, NEW YORK

TODAY'S PLUMBER IS IN THERE PITCHING

with American Kitchens

He's a 4-Ringer Winner in Sales and Profits

1. Today's plumber is in an enviable position—he combines the advantages of his plumbing "know-how" with smart merchandising to give himself a brand new source of profit. With an American Kitchens display—taking up a minimum of floor space, attractive, attention-getting, traffic-stopping, he is ready to show the products he has to sell. *Your American Kitchens distributor is ready to help with your display program.*

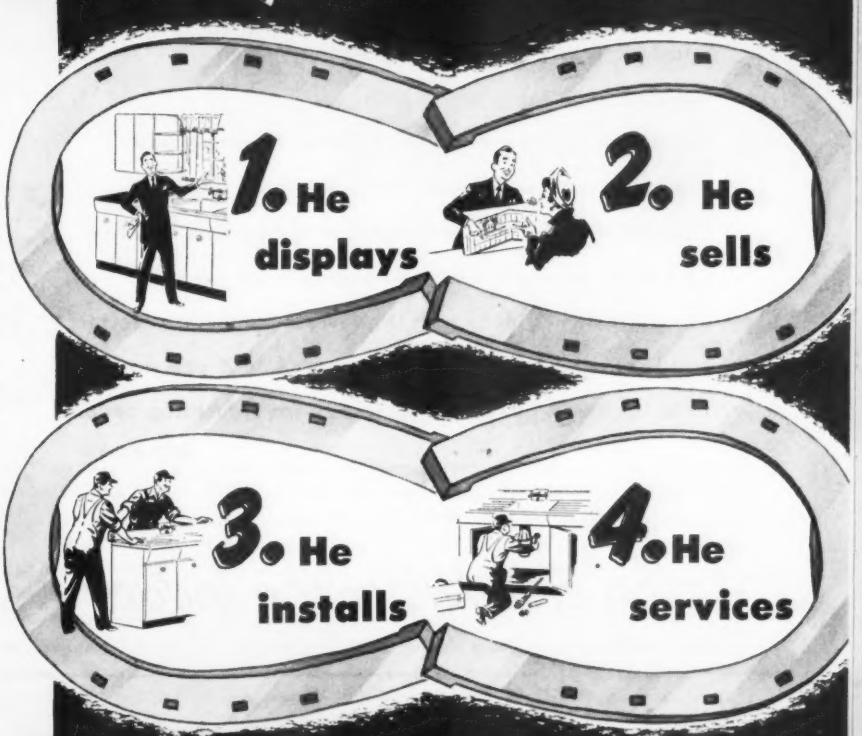
2. Today's plumber is an excellent salesman. He utilizes American Kitchens sales training—thorough training in the appliance business, practical, easy to understand and easy to use. *Your distributor holds training in central schools—or right in your own store.*

3. Today's plumber installs the kitchens he sells. He knows installation, of course, but *American Kitchens offers added training, help for special problems, hints, shortcuts for standard work.*

4. Today's plumber is able to offer complete service—another advantage of the plumber dealer. *American Kitchens' service program demonstrates new methods—covers all everyday problems, enables you to do a better all-around service job.*

Why don't you take advantage of the American Kitchens way to win greater sales and profits—why don't you take advantage of American Kitchens help on all four points. Get in the business now that gives you such an amazing markup on every sale you make—get your share of the big appliance market. Mail coupon NOW!

American Central Division
Connersville (AVCO) Indiana



American KITCHENS

MOST PROFITABLE APPLIANCE YOU CAN SELL

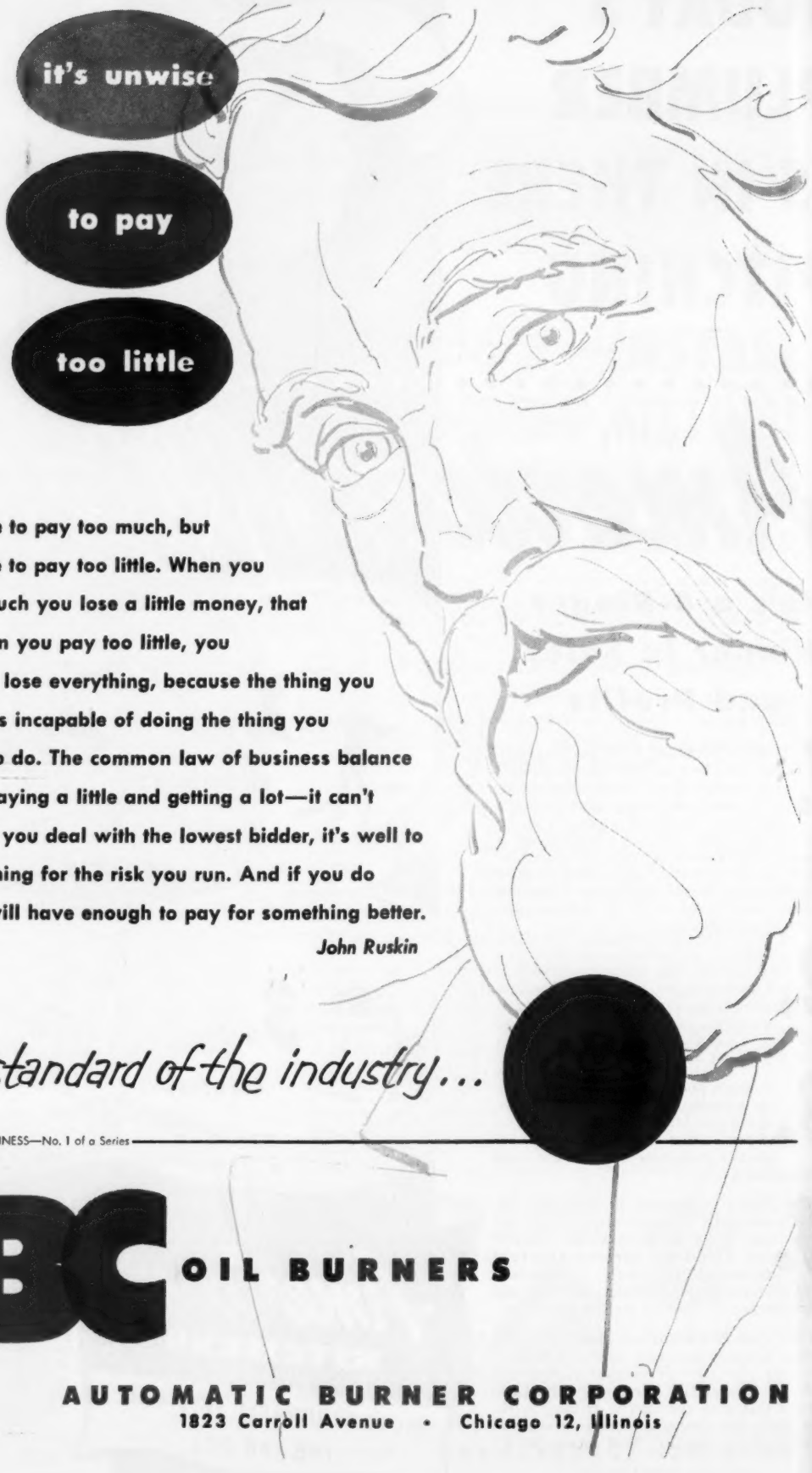
American Central Division, Dept. DE-6
AVCO Manufacturing Corporation
Connersville, Indiana

Please have your distributor contact me about an American Kitchens franchise, if one is available in my community.

Name_____

Address_____

City_____ County____ State____



It's unwise to pay too much, but it's unwise to pay too little. When you pay too much you lose a little money, that is all. When you pay too little, you sometimes lose everything, because the thing you bought was incapable of doing the thing you bought it to do. The common law of business balance prohibits paying a little and getting a lot—it can't be done. If you deal with the lowest bidder, it's well to add something for the risk you run. And if you do that, you will have enough to pay for something better.

John Ruskin

the standard of the industry...

PHILOSOPHY IN BUSINESS—No. 1 of a Series

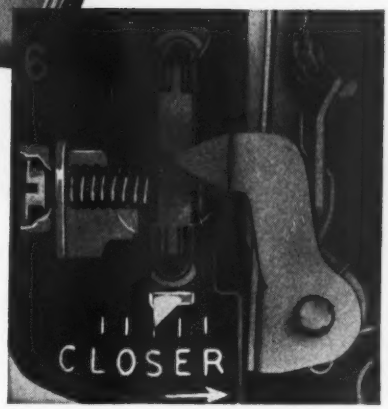
ABC OIL BURNERS

AUTOMATIC BURNER CORPORATION
1823 Carroll Avenue • Chicago 12, Illinois

demand DETROIT CERTIFIED CONTROLS

ONLY DETROIT OFFERS

TIMED CYCLING WITH THE ADJUSTABLE PARALLEL HEATER...



TIMED CYCLING
Gives Your Customers

Uniform room temperature—controlled within a fraction of a degree • Elimination of the waste and discomfort of over and under heating • Greater fuel economy • Automatic adjustment of heating to all existing influences, such as outside temperature, wind direction and velocity, solar radiation, etc. • Geared-to-the-weather heating.

a turn of a screw

tailors temperature control to fit any installation!

DETROIT'S No. 411-CH *Timed Cycling* Thermostat is a natural for all your new installation and conversion jobs. Equipped with an easily adjustable parallel heater, the No. 411-CH can be swiftly adapted with minimum effort to provide maximum comfort under a wide variety of installation conditions. With a simple turn of a screw, cycles can be shortened or lengthened to fit the specific installation without disturbing the factory settings. Because the unique *Timed Cycling* parallel heater is not affected by variations in the electrical load, this remarkable thermostat may be used on *all* types of installations and is particularly well adapted to conversion burner work where the heating unit is either over or under size. In addition, the *Timed Cycling* Thermostat eliminates the need to select a special heater by giving you *one* heater adaptable to *all* jobs. This exclusive feature greatly simplifies inventory, installation and service problems and assures your customers the utmost in heating comfort. For complete information see your DETROIT wholesaler today.

Write for Form No. 1545

DETROIT
LUBRICATOR COMPANY

5900 TRUMBULL AVE., DETROIT 8, MICHIGAN
Division of American Radiator & Standard Sanitary Corporation
Canadian Representatives: RAILWAY & ENGINEERING SPECIALTIES, LTD.—Montreal, Toronto, Winnipeg

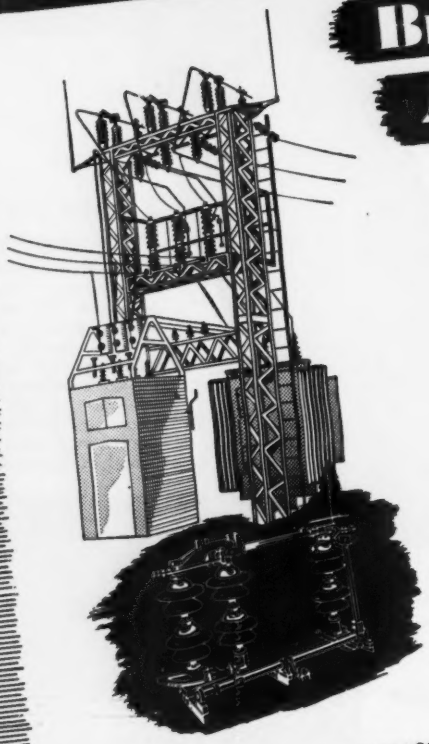
"DETROIT"

DETROIT HEATING AND REFRIGERATION CONTROLS • ENGINE SAFETY CONTROLS • FLOAT VALVES AND OIL BURNER EQUIPMENT • DETROIT EXPANSION VALVES AND REFRIGERATION ACCESSORIES • STATIONARY AND LOCOMOTIVE LUBRICATORS

Serving home and industry AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

ELECTRICAL ENGINEERS USE...

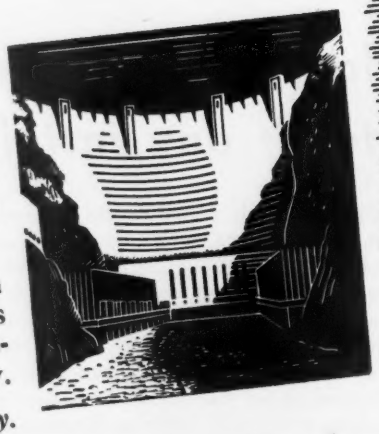
Bronze Alloys For High Electrical Conductivity and High Mechanical Strength



From generator to consumer, electricity depends on *bronze alloys* for transmission and distribution.

In all phases of the electrical industry, *bronze* and *copper* are used because of their high conductivity, resistance to corrosion, economy and fine machining qualities.

Cast bronze clamps, connectors, switch current carrying parts and miscellaneous fittings have up to 25% electrical conductivity, depending on the individual alloy.



Bronze is essential to the electrical industry.

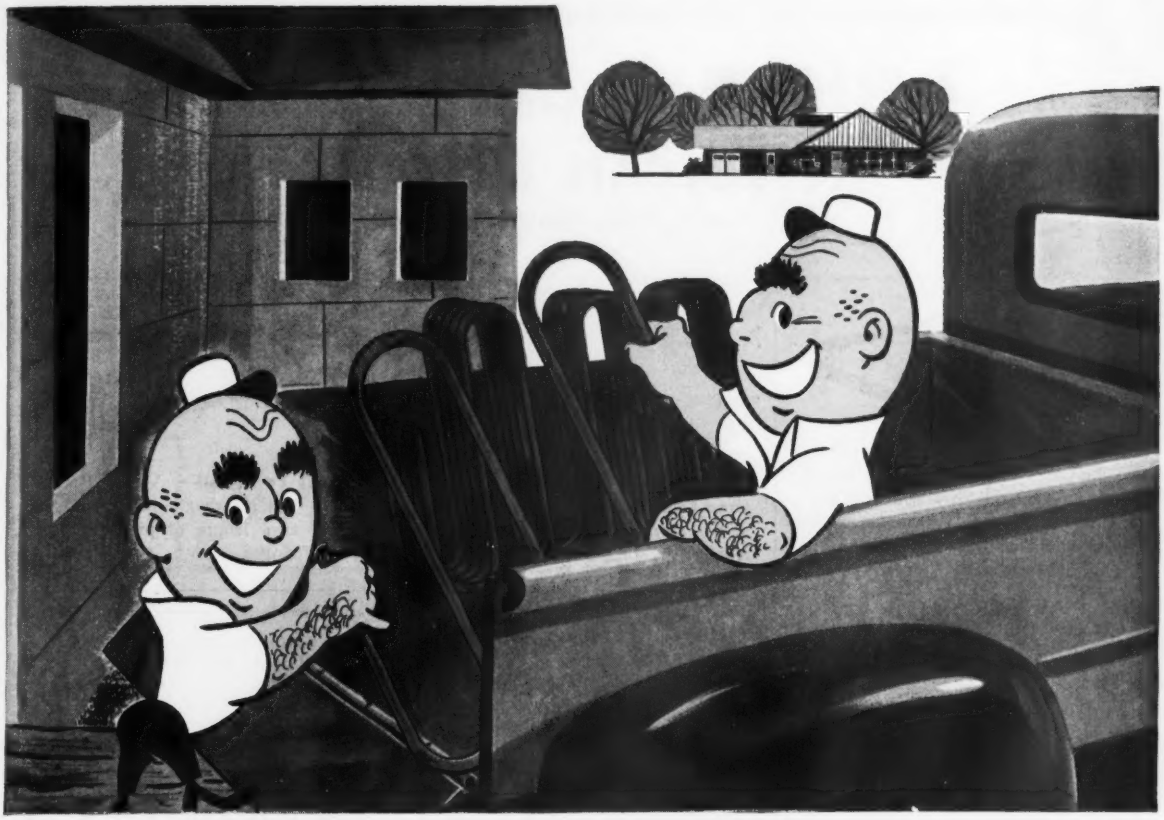
Specify—LAVIN NON-FERROUS INGOT—*Quality*

R. LAVIN & SONS, INC.

Refiners of Brass, Bronze and Aluminum

3426 SOUTH KEDZIE AVENUE · CHICAGO 23, ILLINOIS

REPRESENTATIVES IN PRINCIPAL CITIES



Better radiant heating systems start with Bundyweld Tubing

Bundyweld Tubing performs better in your systems, cuts waste, saves time in fabrication, too.

It stands alone, the only tubing double-walled from a single strip, with an exclusive beveled seam-edge. It's copper-brazed through 360° of wall contact into a smoother, stronger, solid-wall tube that spells leakproof, efficient radiant heating systems right from the start.

Bundyweld comes to you in twenty-foot lengths with one end expanded if specified. It fabricates quickly, easily at your shop or building site. No kid-glove handling; it's ductile, yet extra-strong. One man easily forms Bundyweld on a simple bending fixture. Just two men quickly position the lightweight, rigid grids.

Check your *Sweet's Architectural File* or write us now for more detailed information. Though defense tubing requirements get first call, we'll do our best to fill your needs. ***Bundy Tubing Company, Detroit 14, Michigan.***

Bundyweld® Tubing

DOUBLE-WALLED FROM A SINGLE STRIP

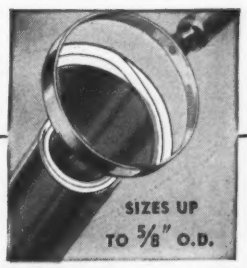
WHY BUNDYWELD IS BETTER TUBING

Bundyweld starts as a single strip of basic metal, coated with a bonding metal. Then it's . . .

continuously rolled twice around laterally into a tube of uniform thickness, and

passed through a furnace. Bonding metal fuses with basic metal, presto—

Bundyweld . . . double-walled and brazed through 360° of wall contact.

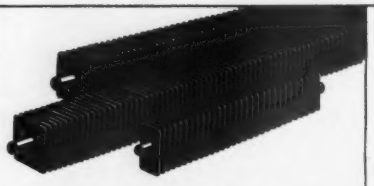


NOTE the exclusive patented Bundyweld beveled edge, which affords a smoother joint, absence of bead and less chance for any leakage.

5 BIG Economy Features IN VULCAN INSTALLATIONS...

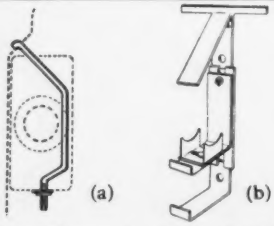
Save TIME, MANPOWER, MONEY on the job.

1. Less Piping — Vulcan fin-tube installations require less piping because pressure tube, with fins imbedded by special Vulcan process, makes up the Vulcan radiator unit.



2. Radiation Comes Cut To Desired Lengths — In increments of 1" up to 12' with ends threaded or chamfered for welding.

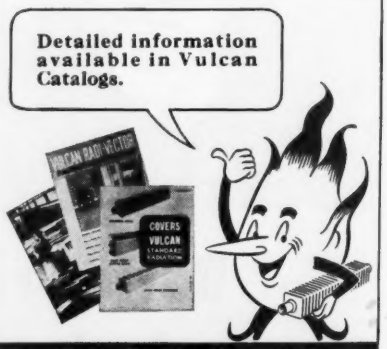
3. Easy To Install — Vulcan Radiation is light in weight, is as easy to handle as a length of pipe, requires fewer fittings.



4. Fewer Supports — Sturdy Rod Hanger (a) suspends radiation directly from backing — every 3 feet. No holes to drill. Linovector CS Hanger (b) every 3½ feet. Only 2 holes per bracket.

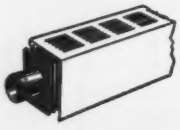
5. Covers and Accessories Easy To Install — Covers are designed for quick easy installation and smooth appearance. Vulcan Standard Radiation Covers are supported directly by radiation or hung on support bracket. Baseboard Radi-Vector Covers are hung directly on the Backing.

Availability of material subject to Government Regulations.



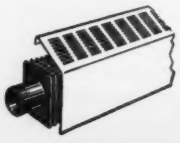
VULCAN STANDARD

Length of Vulcan Standard.

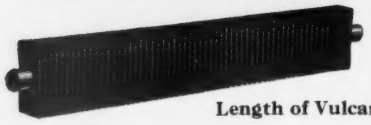


Left: Standard Radiation with Type F cover.

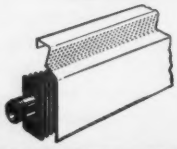
Right: Type S cover.



VULCAN BASEBOARD

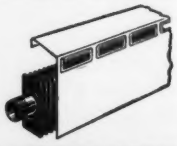


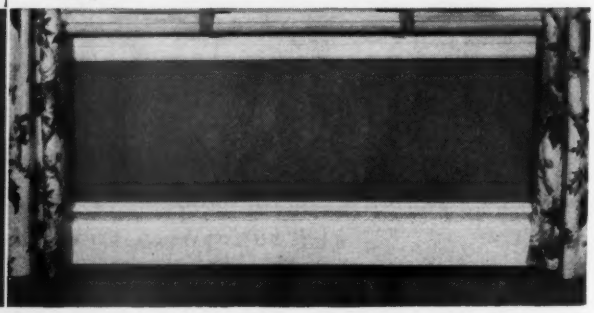
Length of Vulcan Radi-Vector.



Left: Radi-Vector with Type L cover

Right: Type K cover.





The VULCAN Radiator Company

26 FRANCIS AVE., HARTFORD 6, CONNECTICUT

REPRESENTATIVES IN PRINCIPAL CITIES

OVER A QUARTER CENTURY OF FIN-TUBE RADIATION

Standardize on HAMMOND

. . . for plumbing and heating valves in the 125 lbs. working steam pressure class.

Modern cost-saving, specialized production, of one class of valves enables Hammond to give more dollar for dollar value.

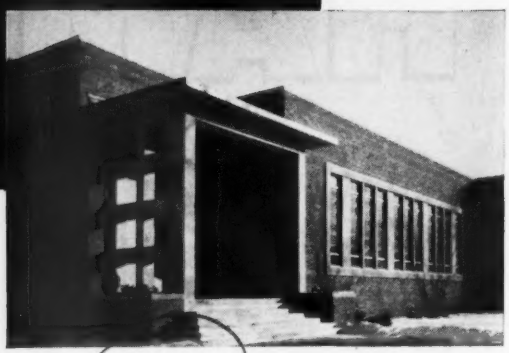
Carried in stock by all leading plumbing and heating wholesalers

HAMMOND BRASS WORKS

HAMMOND, INDIANA

ORIGINATORS OF INDIVIDUAL VALVE PACKAGING

EARL L. CONFER, ARCHITECT
14000 STRATHMOOR, DETROIT 27, MICH.



"For heating installations in religious buildings, I specify Jackson & Church Warm Air Heat.

"First of all, most J-C furnaces can be obtained as package units, and are easily adapted to the space restrictions usually found.

"Secondly, J-C equipment has been found dependable in service.

"Thirdly, the Jackson & Church firm supports a progressive effort in meeting new and special conditions as they develop in the work.

"Heating systems for these religious buildings range in size from 300,000 Btu to 2,000,000 Btu, requiring sectionalizing with three or more zones, automatically controlled. *The savings realized by specifying Warm Air Heat amount to many thousands of dollars!"*

. . . America's largest and most complete warm air heating line . . .

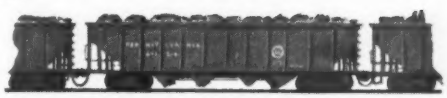
J-C JACKSON & CHURCH CO. - SAGINAW, MICHIGAN

Perfect

Wheatland *precision* Couplings

There's no *guess* work involved in the production of Wheatland *precision* couplings. Modern engineering methods, the skill of experts, years of "know-how" *perfectly* combined, make Wheatland precision couplings measure up high with men who know pipe—and demand the best in couplings.

Help keep America strong and free—get in your scrap now!



precision couplings by

WHEATLAND STEEL PRODUCTS COMPANY

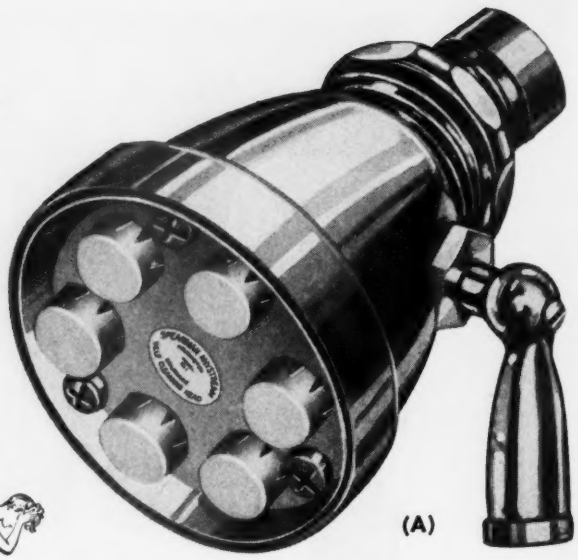
BANKERS SECURITIES BLDG., PHILADELPHIA 7, PA.

This Non-Clog Water-Saving Shower Head Pays For Itself!

Normal Spray for Relaxation

Needle Spray for stimulation

Flood Spray for no-splash rinsing



(A)

THE way it pays for itself is one of the BIG reasons thousands of Speakman Anystream Shower Heads have been installed everywhere. Hot water savings can be as high as 50%. There are plenty of other pluses, too . . . self-cleaning, non-clogging, adjustable spray gives a full-pattern shower. Anyone can choose the exact type of shower they like best—needle, normal or flood—by turning the lever handle.

For steady-temperature bathing the Sentinel Balanced Pressure Mixing Valve, combined with the Anystream Head, is the ideal shower.

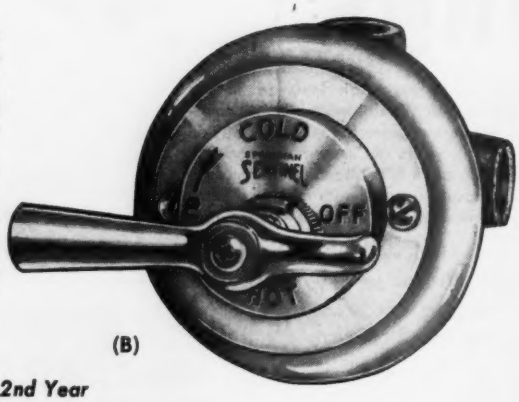
The Sentinel eliminates sudden surges of icy cold or steaming hot water caused by fluctuating supply line pressures due to down-the-line water stealing. The f-l-o-a-t-i-n-g piston unit that does the job is easily removed for servicing *without shutting off* the water supply to the valve.

Sturdily built Speakman Anystream-Sentinel Showers last a lifetime of strenuous use . . . always operate freely . . . provide the best in shower bathing. Write for illustrated literature S-47 and S-58.

Specify Speakman-Sentinel Showers . . . for comfort, economy and easy maintenance.

(A) SPEAKMAN Anystream Shower Head S-2250 Model 1*(Patented). Integral ball joint . . . concealed volume control. Pipe size ½". Can be equipped with Allen Set-Screw to prevent vandalism.
***(Pat. No. 2534549—Dec. 19, 1950)**

(B) SPEAKMAN Concealed *Sentinel* Balanced Pressure Mixing Valve S-1735 (Patented) . . . easy-reading dial . . . working parts renewable from face of valve. Pipe size ½".



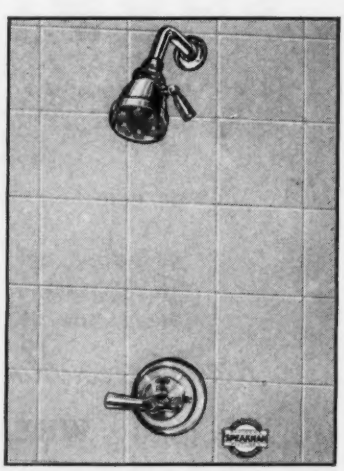
(B)

In Our 82nd Year

SPEAKMAN

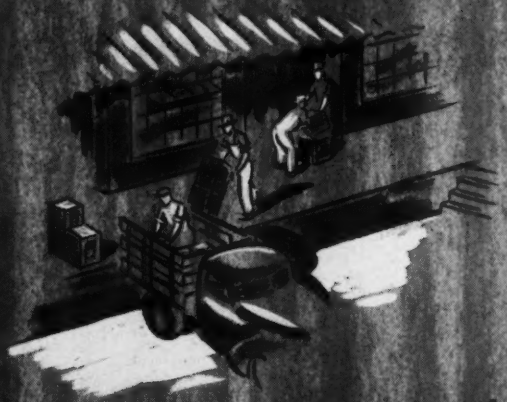
SHOWERS AND FIXTURES

SPEAKMAN COMPANY, WILMINGTON 99, DELAWARE



S-1700 Speakman Concealed Sentinel Shower ½" I. P. S.

WHY A WHOLESALER?



A wholesaler is an indispensable factor in your welfare. He is the liaison between you, the buyer, and the manufacturer.

He serves as the local source for products which you can use to advantage, and brings them within your convenient reach. He can help you with installation problems; and questions put to him could be more quickly answered than would be possible if you went to the manufacturers direct. You can always go to him to obtain valuable information about the products you buy.

And of course, along with his constant endeavor to maintain complete stock assortments of kinds and sizes of his *regular* products, he is always abreast of the news and ever alert to any *new* developments and products that he thinks may bring you benefits.

Select a good wholesaler—and stick with him. He is in a most advantageous position to help you.

And in buying tube, select a good one—such as Wolverine—and stick to it. It's the quality-controlled tube that will deliver exceptional service.

WOLVERINE TUBE DIVISION, Calumet & Hecla Consolidated Copper Company, Incorporated, *Manufacturers of seamless, non-ferrous tubing*, 1435 Central Ave., Detroit 9, Mich. Plants in Detroit, Mich. and Decatur, Ala.

BUY FROM YOUR WHOLESALER

WESTINGHOUSE

Offers a New Home Precipitron® Electronic Air Cleaner

The new Westinghouse Home PRECIPITRON Unit is the most efficient, modern air cleaner on the market. Twenty-two major improvements have been made in this new unit, which incorporates the best features and cleaning capacity of former models. It is listed by Underwriters' Laboratories.

TOP CLEANING EFFICIENCY

Electronic air cleaning is the revolutionary new way to clean air in the home. The electronic method of taking dirt, soot, dust, and pollen out of the air stream begins where other methods of cleaning leave off. It will even remove particles as fine as 1/250,000 of an inch—even smaller than those which comprise cigarette and cigar smoke!

ECONOMY OF OPERATION

Total energy consumption is only 60 watts. This means that the unit costs less than a *dollar a month* to operate.

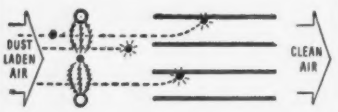
SMART STYLING

Advanced design and attractive finish make the cabinet suitable for installation in recreation rooms or utility rooms.

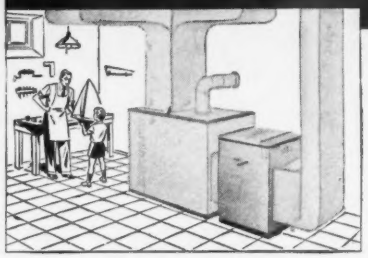
COMPLETELY ASSEMBLED UNIT

PRECIPITRON comes in one unit, assembled for installation. Internal piping and wiring are complete, and holes are punched for electrical conduit connections. This assures an attractive installation in a minimum of time.

HOW PRECIPITRON WORKS



PRECIPITRON removes dirt from the air electronically. Air-borne particles receive a positive charge as they pass through an electrostatic field, and are unfailingly forced to grounded collector plates. Here they cling until flushed down the drain by periodic washings. PRECIPITRON is installed on the inlet side of a forced warm air heating system. PRECIPITRON is a development of the basic air cleaning principle originally pioneered in the Westinghouse laboratories.



HORIZONTAL AIR FLOW

Straight horizontal air flow through the PRECIPITRON cell, with baffles on both entering and leaving sides, assures uniformity of air flow and maximum cleaning efficiency.

ADVANTAGES OF PRECIPITRON

PRECIPITRON has no moving parts—nothing to clog or wear out, and no filters to replace. "Push-button" cleaning by a self-contained washer is completely automatic, and the cleaner returned to operation once the home owner starts the cycle.

Units now in operation in homes throughout the country have proven that PRECIPITRON (1) greatly reduces house work by keeping walls, ceilings, and furnishings clean and (2) means substantial savings by reducing laundering, cleaning, and repainting or redecorating expenses. Moreover, the removal of pollen and bacteria-laden dust can bring relief from allergies and hay fever.

SOLD ONLY BY DISTRIBUTORS

Westinghouse Home PRECIPITRON is sold directly to home owners by authorized installing distributors. For full information, write to Westinghouse Electric Corp., Sturtevant Division, 122 Damon St., Hyde Park, Boston 36, Mass.

J-80195

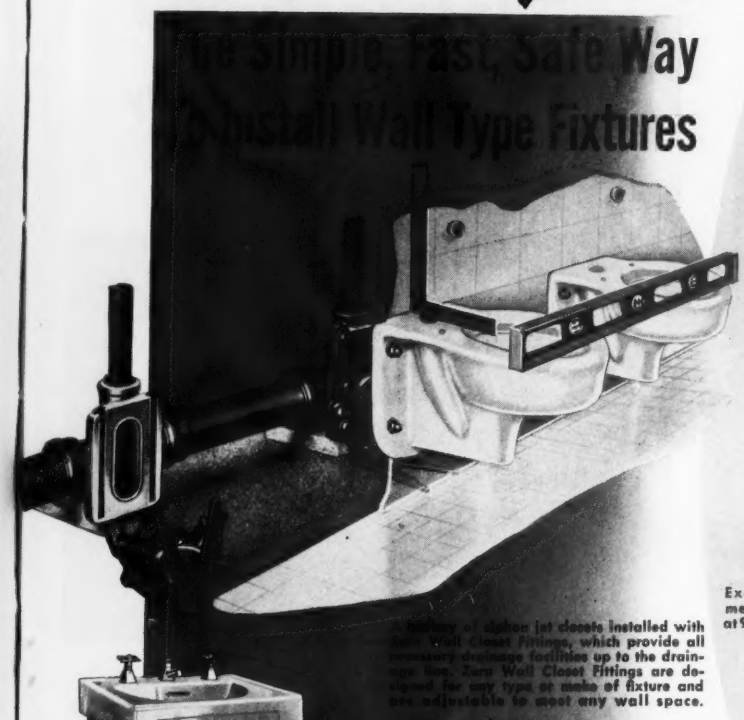
YOU CAN BE SURE...IF IT'S

Westinghouse

IF THERE EVER WAS A REASON FOR NOT USING WALL TYPE FIXTURES, IT NO LONGER EXISTS!

ZURN Found

The Simple, Fast, Safe Way to Install Wall Type Fixtures



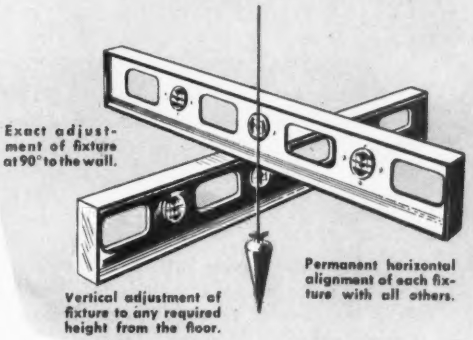
Battery of siphon jet closets installed with Zurn Wall Closet Fittings, which provide all necessary drainage facilities up to the drainage line. Zurn Wall Closet Fittings are designed for any type or make of fixture and are adjustable to meet any wall space.

THE WAY

Perfect Alignment

IN ALL THREE DIRECTIONS

Obtained with Exclusive Adjustment Features of Zurn Carriers... For the Support of All Types and Makes of Wall Fixtures



Exact adjustment of fixture at 90° to the wall.

Vertical adjustment of fixture to any required height from the floor.

Permanent horizontal alignment of each fixture with all others.

Wall type fixtures achieve a higher standard of sanitation, and save maintenance money. With clear, unobstructed floor areas, cleaning is quicker, easier, more economical. Their use does not leave a building that is otherwise well planned and equipped vulnerable to premature obsolescence. Wall type fixtures installed with Zurn Engineered Carriers impart no damaging strain to the finished wall.

Zurn Wall Closet Fittings and Carriers are engineered to support wall type fixtures —off the floor, free of the wall—safely, securely, and in permanent alignment. All necessary adjustments are simple; assembly and installation are fast—free of mistakes, delays and grief on the job.

Zurn Wall Closet Fittings and Carriers are widely used in commercial, industrial and institutional buildings from coast to coast — for installation of all types and makes of wall closet bowls and wall type fixtures. Consult a Zurn representative about wall fixture plumbing.

AREA FLOOR DRAIN

J. A. ZURN MFG. CO.

PLUMBING DIVISION, ERIE, PA., U.S.A.

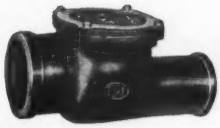
SALES OFFICES IN ALL PRINCIPAL CITIES

ZURN

Pre-eminent Manufacturer of Sanitary Products for the Protection of Human Health and Modern Structures

ROOF DRAIN with Internal Expansion Joint; High Velocity Drainage

Supremo Perfect Seal FLOOR LEVEL CLEANOUT



BACKWATER VALVE Non-fouling

Standard Model Cast Iron GREASEPTOR

TAKE YOUR WORKSHOP WITH YOU

in a new International with Metro body*

Ever stop and figure how many extra trips you make back to your shop for tools and supplies? Ever figure the cost in terms of unprofitable time, of wasted gas?

If you have, you'll see the wisdom of the "one-stop shop" an enterprising plumber has fixed up in the Metro shown above.

In it he has a small work bench, vises, and a tool chest. Along one wall are open bins, drawers and racks for holding pipe fittings, fixtures and other plumbing supplies. The "man high" center aisle is clear from front to rear—with plenty of room for a crated bathtub, water heater, kitchen sink, or laundry tubs. Rear doors can be locked open for carrying extra long lengths of pipe.

Now there's an idea for *you!*

There are 6 Metro sizes, with payload capacities up to 375 cubic feet, body lengths up to 12 feet, and gross vehicle weights up to 11,000 pounds. The largest is big enough to handle most home furnaces as well as other bulky equipment.

You'll find the new Metro with the Silver Diamond valve-in-head engine offers perfectly balanced power for both peppery pick-up and heavy hauling. You'll save money on operating costs, keep maintenance at a minimum and enjoy the longer truck life built into every heavy-duty engineered International Truck, regardless of size.

The practical advantages of a Metro "workshop on wheels" can save you both time and money. Our Metro body experts have the experience, materials and tools to build your shop to your own exact specifications. But, if you prefer, you may design and build your workshop yourself. Either way, you'll make money with a Metro.

Talk it over with your International Truck Dealer or Branch, now. Find out why the Metro is America's most popular multi-stop truck.

*Metro. Registered trade mark of The Metropolitan Body Company, Inc., subsidiary of the International Harvester Company.

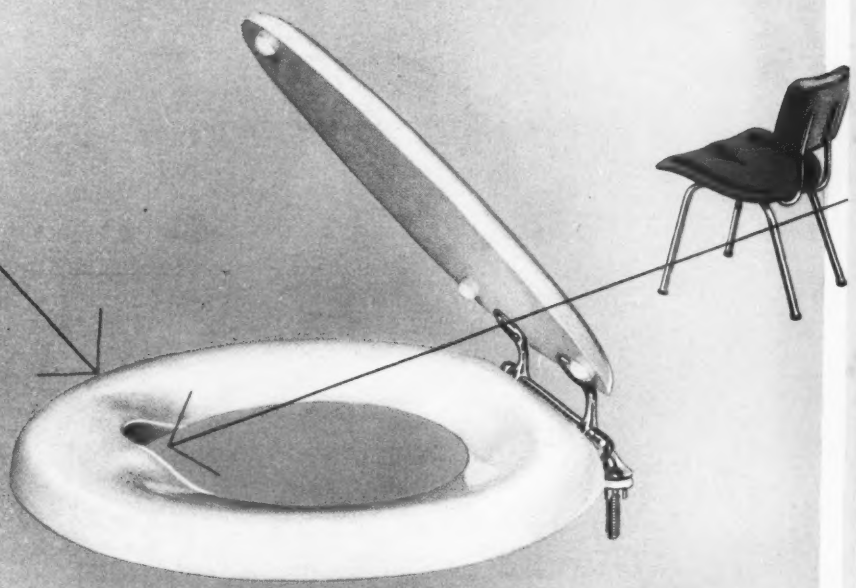
International Harvester Builds
McCormick Farm Equipment and Farmall Tractors
Motor Trucks . . . Industrial Power
Refrigerators and Freezers

International Harvester Company • Chicago

INTERNATIONAL TRUCKS

Every model heavy-duty engineered for longer life

Nationally advertised in full color in the Building Manual of America's most influential home magazine . . . HOUSE BEAUTIFUL.

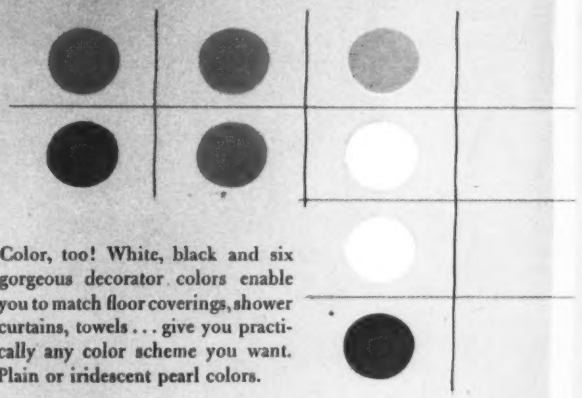


saddle seat for

comfort

even in the bathroom

Here is a truly modern, and truly comfortable, toilet seat—the new Stasco Saddle Seat. It's fully molded in the Windsor shape, which connoisseurs of comfort claim can't be equalled. It's not only comfortable, but good-looking . . . and completely sanitary. The beautifully lustrous surface is seamless pyroxylin, will not crack or craze. Both seat and cover are molded in one piece; they cannot split or come apart.



Color, too! White, black and six gorgeous decorator colors enable you to match floor coverings, shower curtains, towels . . . give you practically any color scheme you want. Plain or iridescent pearl colors.

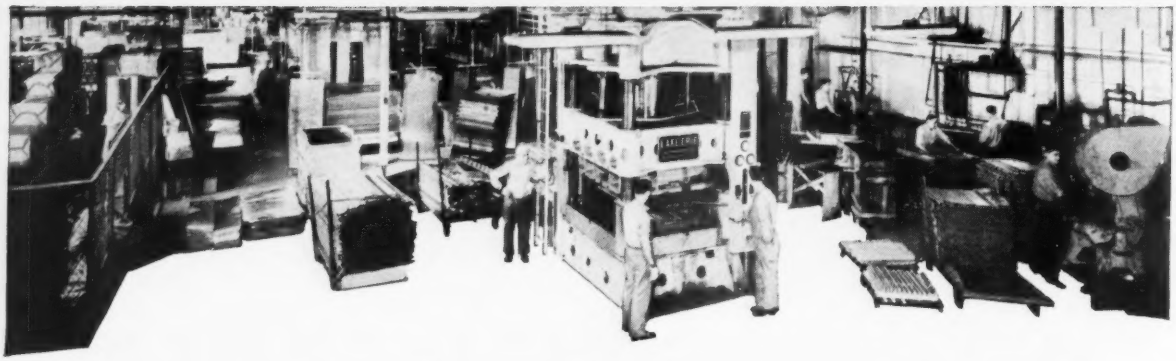
the new stasco saddle seat is the most comfortable toilet seat made

Stasco saddle seat

SANISEAL DE LUXE

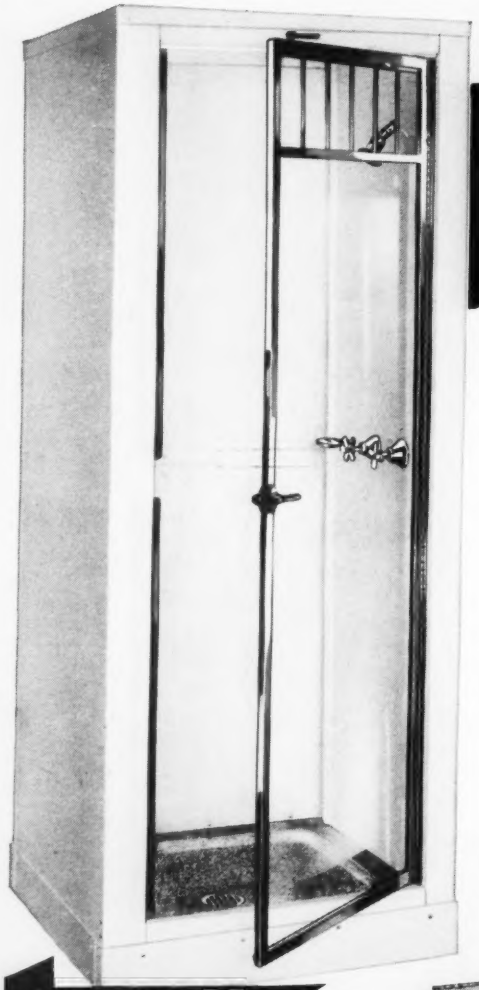
STANDARD TANK & SEAT COMPANY, CAMDEN, NEW JERSEY

Order right from this page! Just phone your master plumber and tell him the color of the Stasco De Luxe Saddle Seat you want. He will deliver it right to your home.



be sure of a *dependable* source of supply

...sell



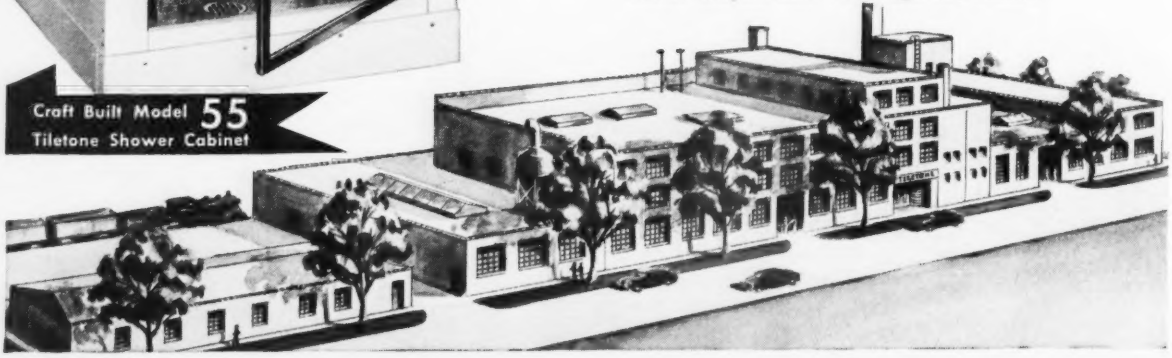
TILETONE *Shower Cabinets*

Maybe you're concerned about your source of supply of products made of critical materials. To legitimate dealers* who want a dependable source of shower cabinets, here's good news. The Tiletone Company offers you a sure source of supply—adequate—reliable. Stepped up manufacturing facilities plus an inventory of critical materials make that service possible. If you have been buying from a source without a complete line of shower cabinets—one that makes *other* products that might get the call of critical materials instead of shower cabinets, then you should investigate the Tiletone franchise. For Tiletone makes only shower cabinets and offers you seven designs—a model for every purpose. So, turn to Tiletone and be sure—sure of supply—sure of profits too.

**Tiletone's offer is not made to encourage hoarding. Sales will be restricted to dealers for resale in the daily market.*

TILETONE COMPANY
2323 Wayne Ave · Chicago 14, Illinois

Craft Built Model 55
Tiletone Shower Cabinet



"I save copper with NIBCO wrot fittings —and I'm money ahead on the job!"

There's a Nibco fitting that's right for every part of an installation. That saves bushings . . . and that means copper! When you have less fittings to buy and handle and less joints to make you can be sure you're saving solder and saving time. And at the same time you're giving your customer a sounder job. But that's only part of the story. Because NIBCO fittings are wrot from tubes, each fitting takes less copper and looks better when installed.

You'll be money ahead, too, when you use NIBCO wrot fittings. Ask for them at your jobber's.

Write for New NIBCO 108-page Catalog of Valves and Fittings.

NIBCO

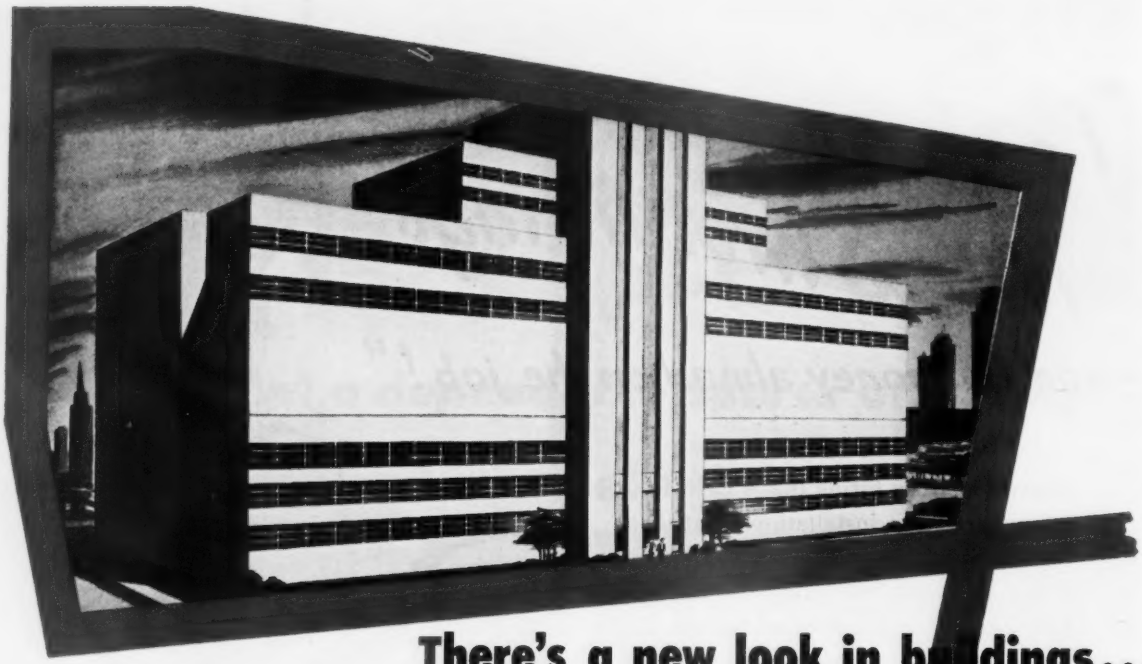
NORTHERN INDIANA BRASS CO.
604 PLUM ST., ELKHART, INDIANA

NORTHERN INDIANA BRASS COMPANY
604 Plum Street, Elkhart, Indiana
Send me new 108-page NIBCO Catalog G with more styles and sizes of fittings than ever before.

Name_____

Address_____

City_____ State_____



There's a new look in buildings...

but the name on the pipe is the same...

SPANG CW

Radiant heating is the new look in heating for today's modern office, factory buildings and homes . . . and Spang CW Steel Pipe is your best buy for trouble-free radiant heating in all kinds of structures.

Your men will like the way Spang CW Steel Pipe fits up. It's uniformly top-quality, it bends smoothly and easily, is easy to cut and weld.

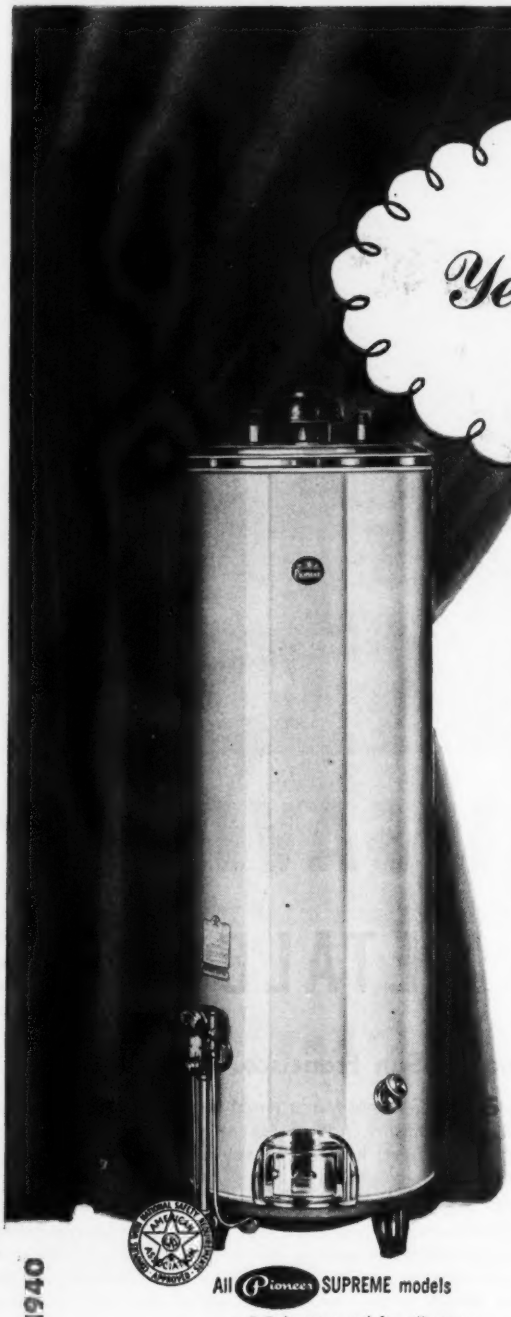
Spang CW Steel Pipe gives years of trouble-free service in modern closed-circuit heating systems. It's been a standard piping material ever since closed wet heating was developed, and it is used throughout industry for all kinds of services.

Spang CW Steel Pipe is distributed by leading supply houses everywhere. They handle the things you'll need to go with Spang CW Steel Pipe for radiant heating, snow-melting, and any other wet-type heating system. Tell them what you need . . . in spite of today's great demand for Spang CW Steel Pipe, they'll do everything possible to make deliveries quickly, fairly.

SPANG-CHALFANT
Division of The National Supply Company
GENERAL SALES OFFICE: Grant Bldg., Pittsburgh, Pa.
District Sales Offices: Atlanta; Boston; Detroit; Houston; Los Angeles; New York; Philadelphia; Pittsburgh; St. Louis

SPANG
CW
STEEL PIPE

QUALITY
that is recognized wherever pipe is used



Year After Year It's

Pioneer

SUPREME
AUTOMATIC GAS WATER HEATER

LASTS AND LASTS—MINIMUM CALL BACKS—NO HEADACHES

With the Pioneer SUPREME Gas Water Heater you sell just one quality—the finest! Behind every SUPREME Water Heater stands Pioneer's 30 years reputation for beauty, efficiency and dependability that assure you satisfied customers, minimum service calls.

And into every SUPREME Water Heater, Pioneer builds these 8-way high-tested features:

High gallonage recovery • Protected against rust and corrosion • Sturdy construction • Full heat-retention • Economy of operation • Longer tank life • Safety • Quick, clean hot water for less.

1926 1927 1928 1929 1930 1931 1932 1933 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951

Pioneer makes a complete line of Gas Water Heaters for all budgets in 20 to 100 gallon capacities . . . also a complete line of Pion-Aire Gas Wall Circulators, from 10,000 to 50,000 B.T.U. input. 4 strategically located shipping centers, one near you, assure prompt deliveries and service.

All Pioneer SUPREME models are A.G.A. approved for all gases.

10 YEAR WARRANTY PLAN

Unconditional 1 year guarantee for commercial use only

FOR 30 YEARS

Pioneer WATER HEATER CORPORATION

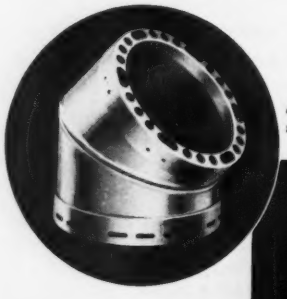
3131 San Fernando Rd., Los Angeles 65, Calif.

Mr. M. Hochede, General Manager
New Mission Heating & Ventilating Co.
San Francisco, Calif.

"SUBSTANTIAL SAVINGS"

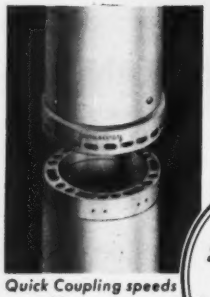
with QC METALBESTOS GAS VENT

reported by San Francisco contractor.



Adjustable Elbows simplify installation.

Adjustable Length eliminates cutting and fitting.



Quick Coupling speeds assembly.

Mr. M. Hochede, General Manager of the New Mission Heating & Ventilating Company, having recently completed work on a large housing project, has this to say about Metalbestos Gas Vent Pipe:

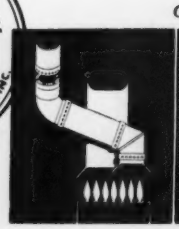
"When QC Metalbestos was first manufactured by the William Wallace Company, we could see that there would be a substantial saving in labor increasing our profits and enabling us to do more work with the same amount of men. As one of the most vital things in any business is labor, we were quick to adopt this new product."

LOWER INSTALLATION COSTS were possible because lightweight self-aligning sections go quickly into place. No special tools or skills needed. Adjustable lengths and versatile fittings eliminate costly cutting and special fabrication . . . keep labor costs to a minimum.

Order from your jobber or write to Dept. C.

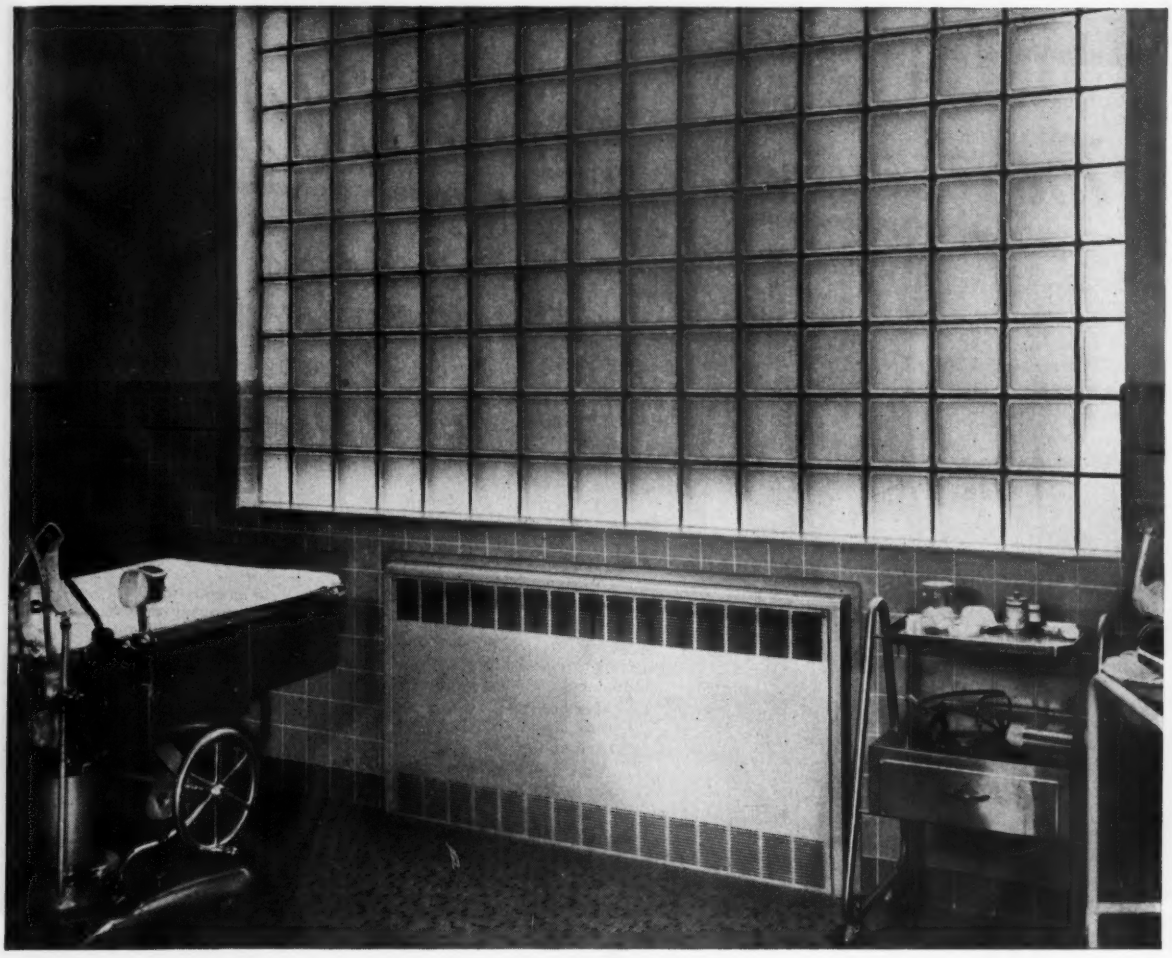
LISTED UNDER EXAMINATION SERVICE UL OF UNDERWRITERS' LABORATORIES, INC.

Metalbestos Gas Vent pipe meets all safety requirements of the Underwriter's Laboratories for Type B Gas Vents.



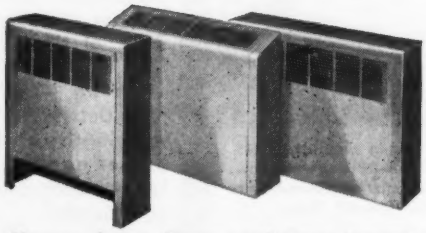
METALBESTOS DIVISION

WILLIAM WALLACE COMPANY • BELMONT, CALIF.



FOR FAST, DEPENDABLE HEATING

...SPECIFY MODINE INSTITUTIONAL CONVECTORS



Choose from three enclosure types!

Type IF with upper grille and choice of lower opening or lower grille . . . for either recessed or free-standing installation. Type IS and IW for wall placement. Dampers for all enclosures optional at slight extra cost.

Here's even, healthful heat . . . low-cost, trouble-free service

More and more hospitals are standardizing on Modine Convectors because they're so dependable . . . give fast, even heat when you want it, *instantly*. Modines assure you all the advantages of steam or hot water heating . . . are economical to install and maintain.

Modines are smartly styled, too . . . complement any interior treatment. And if conservation of space is one of your problems, Modine Convectors may be recessed in the walls.

Send for new Modine convector catalog today

Modine

INSTITUTIONAL CONVECTORS

For complete details, call your Modine representative . . . listed in the classified section of your phone book. Or write direct. Modine Mfg. Co., 1502 DeKoven Ave., Racine, Wis.

R-1103

The results are SENSATIONAL

Available in 2-lb. containers . . . packed 12 per carton . . . and a 2-lb. average dose does the job!

. . . NO OTHER METHOD OF ROOT REMOVAL AND PREVENTION CAN MATCH IT!

We only put HERCULES R-D root destroyer on the market this spring, and already users across the country are getting evidence of sensational results!

Plumbers find they can remove roots *completely* from sewers and storm drains with *phenomenal* ease—and without harming a single leaf on trees and shrubs.

R-D crystals dissolve at the point of root obstruction. There the chemical, absorbed by the root, kills the root and causes it to decompose and wash away. This is the only method which has gained national recognition in the field of sanitary engineering.

Yes, R-D affords the *easiest, safest, most economical* and *most efficient* means of removing root obstructions ever devised. It makes any costly, clumsy, dangerous and time-consuming methods hitherto employed *completely obsolete*. No special equipment is required. No digging is necessary.

Moreover, although HERCULES R-D is extremely powerful, it is *absolutely safe to handle*. IT IS NOT A CAUSTIC SODA and does not contain lye or acids of any kind.

You can obtain R-D at your wholesaler's . . . or, if it is not yet in stock, order direct and send us his name and address.

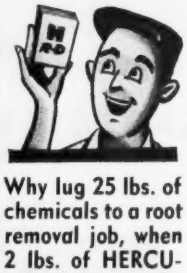
R-D can be used in Fiber, Tile, Plastic, Clay, Concrete, Cast Iron and any other type Sewer Lines. It is safe to use in all systems including Cesspools and Septic Tanks.

Why HERCULES R-D is best:

1. **R-D HAS BEEN FIELD-PROVEN FOR YEARS BEFORE BEING MARKETED**—The major ingredient of R-D has been field-tested for over 12 years by a large municipality.
2. **R-D IS EASY TO APPLY**—It is simply poured as is from the container. No mixing or stirring required.
3. **R-D IS SAFE**—It does not expose the user to danger from burns, gases or violent reactions. Does NOT harm trees or shrubs.
4. **R-D IS ECONOMICAL**—Root-free sewers and drain lines are assured by only two treatments with R-D annually.
5. **R-D IS HIGHLY EFFICIENT**—It is the ONLY KNOWN TREATMENT which kills main roots not actually submerged in the liquid. Hair roots extending into the liquid absorb sufficient R-D to kill main roots growing within the sewer.

a—Root not treated with HERCULES R-D. Root mass 4-ft. long and 8-ins. in diameter completely blocked pipe and practically stopped flow.

b—Same root, a short time after initial treatment. Disintegration is in an advanced stage, and flow in the pipe is no longer obstructed.



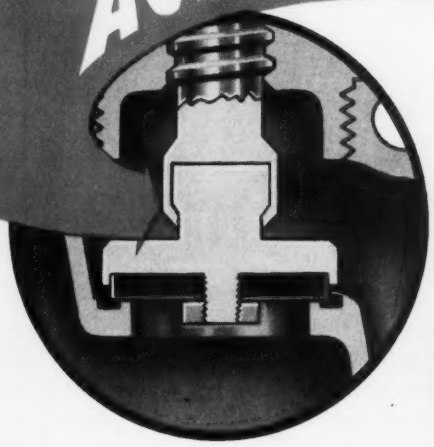
Why lug 25 lbs. of chemicals to a root removal job, when 2 lbs. of HERCULES R-D — the amazing, NEW Root Destroyer — will do the work better and with least labor and cost to you?

The Right Hand of The Plumbing Industry for over 36 Years.

HERCULES CHEMICAL CO., Inc.

332 CANAL ST., NEW YORK 13, N. Y.

O-B FREE-SWIVELING ACTION



No. 3 LINE COMPOSITION DISC VALVE

100 lbs. W.S.P.
150 lbs. W.O.G.
Available in globe type, with or without waste, angle type also available.

REDUCES DISC DAMAGE

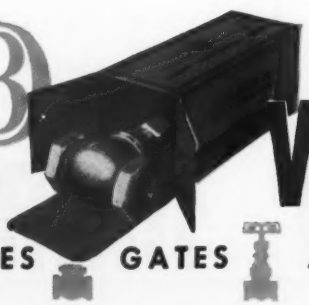
O-B *Composition Disc* Globes and Angles shut off with a smooth, non-grinding action that lessens disc damage and guarantees better valve performance.

The section view shown above tells the reason why. You will notice that the disc holder is attached to the valve stem with a free-swiveling connection. As the valve is closed, the disc stops turning on first contact with the raised seat. The free-swiveling disc holder permits further tightening without causing damage or excessive wear to composition discs. As a result, discs last longer and valves remain leaktight for many years without requiring disc replacement.

To insure complete customer satisfaction, buy O-B composition disc valves for your next plumbing or heating job. A full line of globes and angles with either screw-type or solder-type ends is available from your local Ohio Brass Company distributor. See him for any of your plumbing and heating supplies.

OHIO BRASS CO. MANSFIELD, OHIO

4066-V

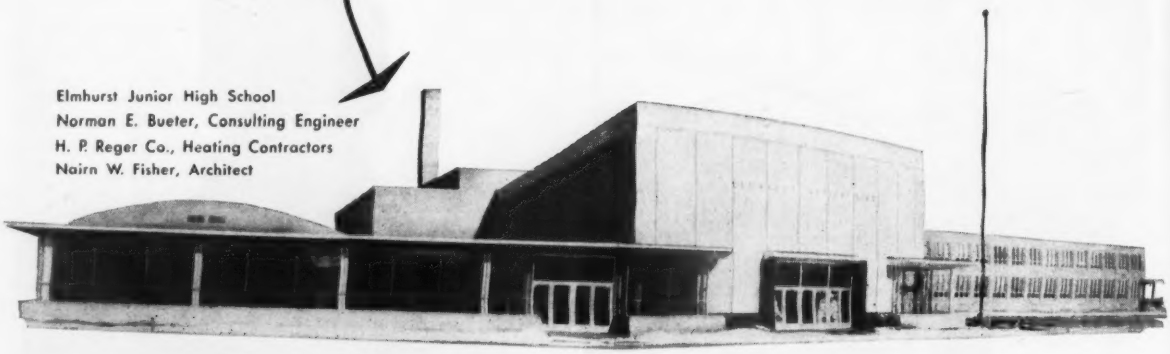


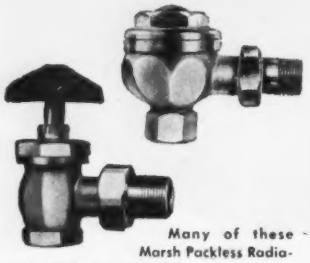
Ohio Brass VALVES

BRONZE GLOBES ANGLES GATES AND CHECKS

What equipment but MARSH ...for a model school building like this?

Elmhurst Junior High School
Norman E. Bueter, Consulting Engineer
H. P. Reger Co., Heating Contractors
Nairn W. Fisher, Architect



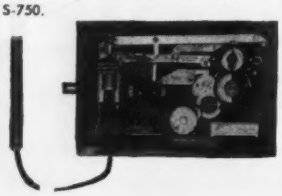


Many of these Marsh Packless Radiator Valves were used in the elaborate heating system of the Elmhurst Junior High, and a large number of thermostatic traps were used in connection with radiators and coils.

The Marsh No. 8 float and thermostatic trap, illustrated, is typical of many traps of this kind used in the Elmhurst school.

BIG SAVINGS WITH MARSH—TRITROL—heat regulation in step with the weather

By controlling inside heat in accordance with outside temperature, Marsh Tritrol gives ideal comfort at minimum cost. Installation is simple. Cost remarkably low. Ask for Bulletin S-750.



A lucky throng of boys and girls have just begun classes in the newly completed Junior High School at Elmhurst, Ill., a suburb of Chicago. One of the finest junior high schools ever built, the expansive structure houses a large gymnasium, a totally separate auditorium seating 900, a large, pleasant cafeteria, spacious well-equipped classrooms—facilities far beyond those of the old-time schools their dads and mothers knew as full fledged high schools.

In the rapid advance of school buildings during recent years, no phase has seen greater improvement than heating and air conditioning, and this model school is a particularly good example of this. No expense has been spared in any detail of the vacuum system to make it functionally and permanently effective. So it is significant that Marsh Traps and Valves were chosen for the vital job of keeping heating coils, mains and risers free from air and condensate throughout the entire heating system.

The use of Marsh equipment here is just one more example of advanced heating systems in outstanding buildings all over America in which Marsh heating equipment has been the first choice of foremost consulting engineers, heating contractors and architects. Use Marsh traps, valves, vents, and controls on that next job and you will know why Marsh has been so often accorded top preference for uncompromising quality, for consistent performance, for downright *value*.

Ask for new Catalog 76-H covering Marsh packless valves, radiator traps, float and thermostatic traps, inverted bucket traps, float traps, return traps, air traps, air vents and boiler gauges.

MARSH HEATING EQUIPMENT CO.

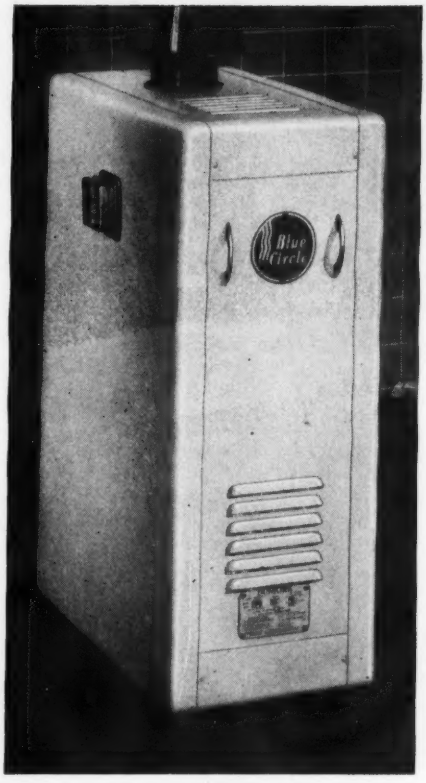
Sales affiliate of Jas. P. Marsh Corporation • **Dept. S, Skokie, Ill.**

MARSH *Heating Specialties*

SINCE 1865

NEW DUNKIRK GAS FIRED BOILERS

Blue Circle



Making Warm Friends with the Trade

Men who are specifying, selling and installing these new Blue Circle Boilers are welcoming them with open arms. They like their unusually small size, attractive appearance, easy hook-up and satisfactory performance. They like the price too!

with Home Owners

Whether building or remodeling, home owners are saving space, saving fuel cost and enjoying the automatic comfort and cleanliness of hot water heating. And they like the price too!

✓ Check These New Blue Circle Features

1. Size for 6 room houses measures only 14¼" x 29¼" x 42¼".
2. Handsome white enameled jacket matches modern appliances.
3. Tucks away in kitchen, alcove, rumpus room or basement.
4. Provides automatic hot water heating.
5. No fuel storage problem. No shovelling.
6. Silent, clean, odorless, effortless.
7. Wet base design — can be installed on wood floors.
8. 6, 8, 10 and 12 section sizes.
9. Boiler made of cast iron—the life-time metal.
10. Approved by the American Gas Association.

DUNKIRK RADIATOR CORPORATION
DUNKIRK, N. Y.

DUNKIRK RADIATOR CORPORATION
DUNKIRK, N. Y.

Send me information and prices on Blue Circle Gas Fired Boilers.

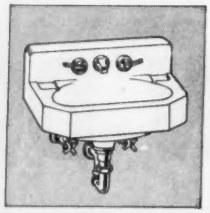
Name_____

Concern_____

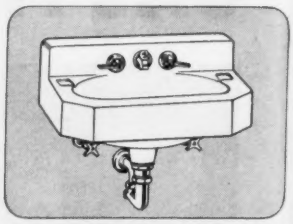
Street_____

City_____ State_____

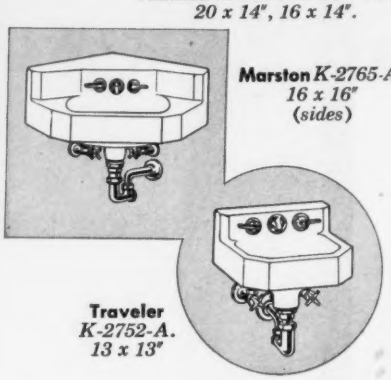
Hampton *K-2706-A. 22 x 19", 19 x 17"*



Delton *K-2735-A. 18 x 15"*



Taunton *K-2730-A. 24 x 14", 20 x 14", 16 x 14".*



Marston *K-2765-A. 16 x 16" (sides)*

Traveler *K-2752-A. 13 x 13"*

KOHLER

ENAMELED IRON SHELF LAVATORIES

Without overflow or with brass overflow

The Kohler Hampton is widely used for homes, apartments, institutions. Features include the unobstructed shelf across the back, ample basin and compact mixer fitting with pop-up drain. Large size has integral soap dishes.

The compact Delton is much used for housing projects, tourist courts—wherever space must be conserved. The space-saving Taunton is practical for home and apartment washrooms. The Marston permits effective use of corners. The Traveler is suitable for compact washrooms in service stations, offices.

Kohler designs are modern, clean cut. The high-luster, easy-to-clean enamel is fused to non-flexing iron, cast for rigidity. Kohler chromium-plated brass fittings are engineered for lasting efficiency, easy maintenance.

Kohler Co., Kohler, Wisconsin. Established 1873.

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION PARTS

S-D
SANITARY-DASH

MEANS

SOUND DEVELOPMENT

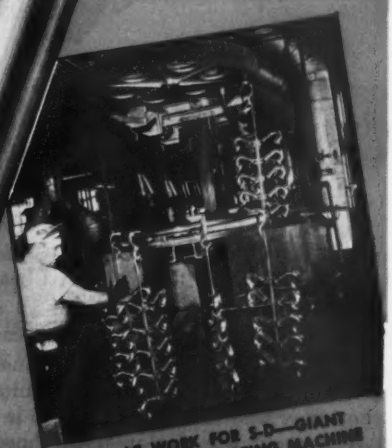
THROUGH

AUTOMATIC BENDING + AUTOMATIC POLISHING + AUTOMATIC PLATING + AUTOMATIC SOLDERING

BENDING AUTOMATICALLY AT S-D

ONE OF A BATTERY OF S-D'S POLISHING MACHINES

IN S-D'S STREAMLINED AUTOMATIC SOLDERING DEPT.



AT WORK FOR S-D—GIANT AUTOMATIC PLATING MACHINE

SANITARY-DASH
MANUFACTURING CO., INC.

11th ST. and 44th ROAD, LONG ISLAND CITY 1, N. Y.

MANUFACTURERS OF TUBULAR BRASS AND PLUMBING GOODS—SHOWER BATH CURTAINS

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"We can't go wrong—it's **radiant heated**"

Steel pipe is first choice for radiant heating

Among the thrills that come to all of us but "once in a lifetime", who does not remember that first Christmas together . . . or the baby's first birthday cake . . . or the first brand-new, shining car?

But the biggest thrill of them all came when, hand in hand, we stood before that just purchased home-of-our-own!

Young folks today (and older ones, too) face the same moments of decision that we did when buying or building a new home. But, when they find their dream house is to have Radiant Panel Heating, they know it was designed by those acquainted with the latest in home building ideas. Radiant Heating becomes a symbol of sound value!

And when the Radiant Panel Heating coils are of Steel Pipe, success is assured. For Steel Pipe has all the desirable characteristics of durability, weldability, formability, and maximum economy . . . proved through more than 60 years of service in domestic heating systems!

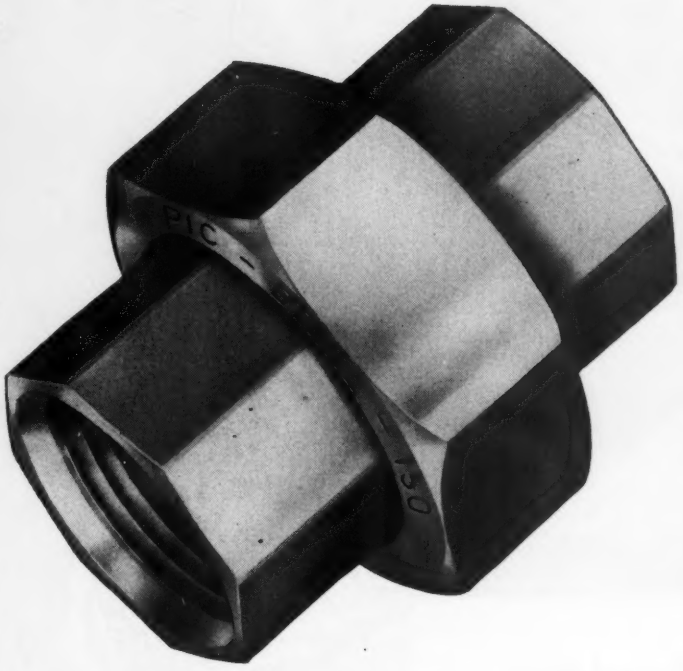
Steel Pipe coils for Radiant Panel systems may be used with equal effectiveness in floor, wall, or, as shown above, ceiling installations.

A 48-page color booklet "Radiant Panel Heating with Steel Pipe" is yours for the asking. Write for it . . . it's free.

COMMITTEE ON STEEL PIPE RESEARCH
AMERICAN IRON AND STEEL INSTITUTE
350 Fifth Avenue, New York 1, N. Y.

PIC STEEL UNIONS

for 150# Service



100% ZINC PLATED

NON-POROUS

ATTRACTIVE

EASY TO INSTALL

MADE BY DART

PIC steel unions are ideal for gas company use — bright and attractive in appearance; non-porous; 100% zinc plated *even on the threads.*

To give unusual strength — an ability to laugh at wrench abuse — ends are made from tough steel pipe coupling stock. And to speed installation the flats are truly flat — truly parallel. Whenever the spot is inaccessible—or a neater appearance is required — just use open-end wrenches.

A special wedge-type bronze seat — plus precision machining of both joint surfaces — ensures real tightness without undue wrenching. Because it's a product of DART UNION COMPANY, you can be certain PIC is far more than an ordinary steel union. Write for FREE SAMPLES!

Write today for Samples!

DART UNION COMPANY
THURBERS AND EDDY STS., PROVIDENCE 5, RHODE ISLAND

Please send me samples of PIC 150# steel unions in the_____" size.

Name.....

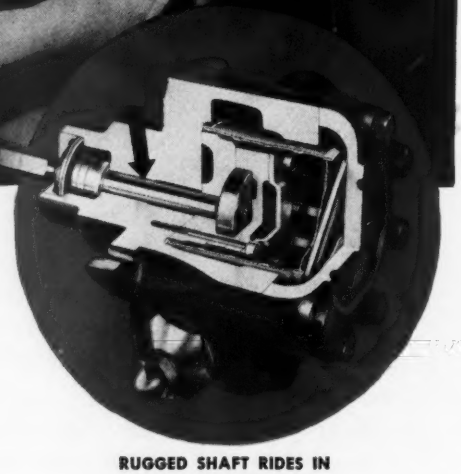
Title.....

Company.....

Street.....

City.....*State*.....

• ANOTHER REASON WHY SUNDSTRAND IS *FIRST* IN FUEL UNITS •



RUGGED SHAFT RIDES IN EXTRA-LONG BEARING

Look at this ample, self-lubricated shaft bearing area which eliminates shaft noise, "wobbling", seizing, and excessive wear!

Large 7/16" diameter shaft and long bearing eliminate shaft failures

Take a piece of extra-thick, specially selected bar stock . . . send it through blanking and grinding operations . . . induction harden it . . . inspect it every step of the way . . . and you come out with the accurately made, husky 7/16" diameter drive shaft that means years of extra life in every Sundstrand Fuel Unit. As an example of the series of rigid inspections, shafts are checked for roundness on this extremely sensitive Sheffield gage. They must be round within 2/10,000 of an inch tolerance! Get latest data now on Sundstrand's new quality-controlled "J" and "K" models—two basic units which meet all new equipment and replacement requirements.

SUNDSTRAND

SUNDSTRAND FUEL UNITS

SUNDSTRAND MACHINE TOOL CO.
HYDRAULIC DIVISION, ROCKFORD, ILL.

Made in Canada by John Inglis, Ltd., 14 Strachen Ave., Toronto

OIL-O-MATIC'S

Management Manual for Dealers*

tells all!

How would you like to have a plan that shows you the shortest route—to profit? Well, Oil-O-Matic dealers have it: Oil-O-Matic's MANAGEMENT MANUAL FOR DEALERS. The "bible" on *every* subject, *every* function of the oil heating business.

This MANUAL tells you how to set up a *practical* operating budget... conduct your market analysis... map out districts and set sales quotas for your salesmen... hire, train and supervise your selling crew... key service and installation to profits... in fact, how to meet and conquer every one of your day-in, day-out problems.

Based on actual experiences of successful dealers, written by specialists who know what to do and what *not* to do, this 235-page MANUAL will help you *sell*... sell *better*... sell *more*... make more money.

** For Oil-O-Matic dealers only—to give them profits plus, to help them build a sound, growing retail operation. Another reason why now, more than ever, Oil-O-Matic dealers have the industry's best franchise.*

OIL-O-MATIC'S NEW, HARD-HITTING SALES STORY

Metered Low Pressure

A new approach—a different approach—to sell the BIG difference in oil burners! "NO WASTED FUEL"—"NO COSTLY SERVICE"—"OUTLASTS AVERAGE BURNER 2 TO 1": powerful appeals that convince homeowners of Oil-O-Matic's money-saving superiority.

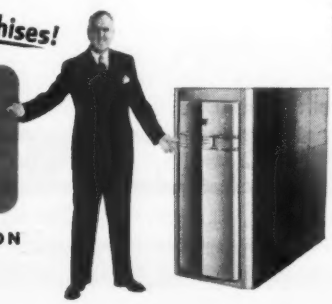
FIRST IN OIL HEAT HISTORY!
LIFETIME GUARANTEE

Only Oil-O-Matic... pioneer of the Low Pressure Principle over 30 years ago... offers a Lifetime Nozzle guarantee! Another powerful sales clincher for Oil-O-Matic dealers.

There is a BIG difference in Oil Burner Franchises!

WILLIAMS OIL-O-MATIC HEATING

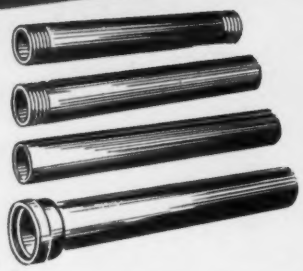
WILLIAMS OIL-O-MATIC DIVISION
Eureka Williams Corporation
BLOOMINGTON • ILLINOIS



For full details of the Oil-O-Matic franchise, write Williams Oil-O-Matic Division, Eureka Williams Corporation, Bloomington, Illinois.

Master Plumbers Know These Outstanding Advantages and Install . . .

CLOW (IPS)* Cast Iron Pipe

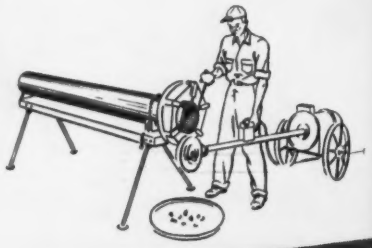


FOR All 3-inch and larger
WASTE, VENT AND DRAINAGE LINES

Clow "IPS" Cast Iron Pipe is used for all types of construction for waste lines and vent stacks, for draining rainwater from roof areas, and for long runs of suspended sewer handling water-borne waste (hot or cold) from plant or laboratory operations, etc.

FOR A CENTURY OR MORE OF SERVICE

When you install Clow "IPS" Cast Iron Pipe for drain lines inside or outside of buildings imbedded in walls or exposed, you're making an installation that will last through a century and more of service.



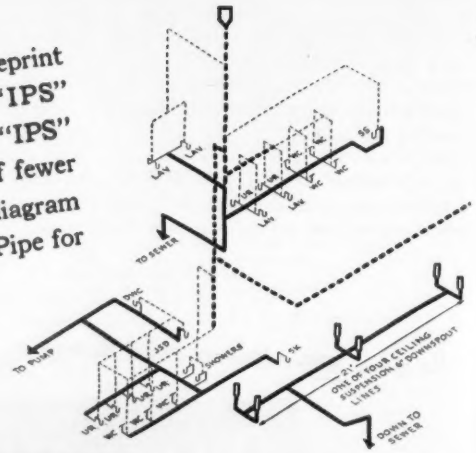
FOR SPEEDY FABRICATION

Clow "IPS" Cast Iron Pipe can be cut, threaded and fitted on the job, with ordinary tools of the piping trade. Available with plain or threaded ends, in 3, 4, 5, 6, 8 and 10" sizes in 18' random lengths. Also furnished with integral caulking hub on one end (other end plain) in 18' random lengths in 4, 6 and 8" sizes.

*"IPS" is Iron Pipe size O. D.

FOR Your Information A Typical Case History . . .

Shown to the right is a section from the plumbing blueprint of a university's research laboratory, with Clow "IPS" (threaded) Cast Iron Pipe indicated most prominently. "IPS" pipe was chosen because of its time saving economy of fewer caulked joints on long runs of piping. Perhaps this diagram may suggest possible uses of Clow "IPS" Cast Iron Pipe for similar jobs on your schedule.



For complete information write for illustrated, descriptive literature TODAY.

JAMES B. CLOW & SONS

201-299 North Talman Avenue • Chicago 80, Illinois

and their National Cast Iron Pipe Division, Birmingham, Alabama; subsidiaries Eddy Valve Co., Waterford, New York; Iowa Valve Co., Oskaloosa, Iowa.

GERBER ENTERPRISES—232 N. Clark Street, Chicago 1, Illinois

☐ Please send Catalog on the big GERBER line.

☐ Have your representative call on me.

Name_____ Title_____

Company_____

Address_____

City_____ State_____

No kick-backs or customer complaints when you install GERBER top-quality CHINA CLOSETS and LAVATORIES.

GERBER Vitreous Chinaware is thoroughly water-tested, fully guaranteed. GERBER'S five modern factories are ready at all times to meet your every plumbing need with a full line of Brass Fixtures, Shower Stalls, China and Steelware.

For your convenience, the wholesale plumbing jobber has Gerber fixtures. See him today, and . . . write for the big Gerber catalog.

GERBER ENTERPRISES

232 North Clark Street, Chicago 1, U. S. A.

New York Office: Empire State Bldg. • Suite 7322, 350 Fifth Ave.

KOKOMO, INDIANA • WOODBRIDGE, NEW JERSEY

DELPHI, INDIANA • PLYMOUTH, INDIANA

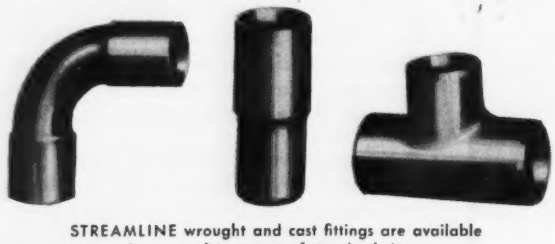
Reprints of this ad are available

look!
...it must be a
Streamline® fitting!

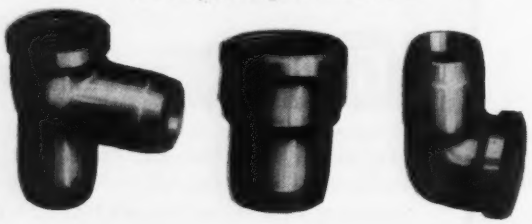
Streamline® **solder type fittings are really made to last . . . and they'll make a neater, quicker installation**

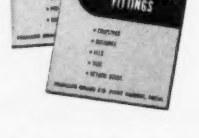
If Cleopatra's plumber had used STREAMLINE fittings we wouldn't be surprised if they would still be in pretty serviceable condition today. For STREAMLINE solder type fittings are really made to last. They cannot rust, they're not loosened by vibration and they're virtually free from clogging. STREAMLINE fittings assure a snug-fitting, tightly joined system that tests leak-proof on the first try and doesn't develop leaks later. When you install STREAMLINE fittings, you can be sure you're installing a permanently reliable conducting system whether for plumbing, heating, air conditioning or industrial use.

And here's something else . . . because of their design, precision manufacture and accurate dimensions, STREAMLINE solder type fittings can be installed quickly and the uniform depth of the solder joints makes it easy to compute the exact length of tubing needed. Thus STREAMLINE fittings not only assure a permanent installation, they also reduce job cost and increase the number of installations a contractor can handle.



STREAMLINE wrought and cast fittings are available in a complete range of standard sizes.





See your jobber for further information or write for catalogs S-351 and W-251 describing our complete line of STREAMLINE wrought copper and cast bronze fittings.

65

MUELLER BRASS CO. STREAMLINE PRODUCTS

MUELLER BRASS CO. PORT HURON 6, MICHIGAN

you can offer your customers

Radiant Heat

IN ALL THE NEW MODERN METHODS

HORIZONTAL WATER CIRCULATOR

with THRUSH forced circulating hot water heat

HEATING METHODS are on the march! Forced Circulating Hot Water Heat, which offers the mildest and most uniform heating, also permits the use of many new and modern heating methods not possible with other forms of heating. It is ideal for radiant heating in any form.

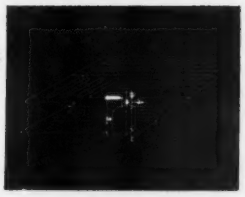
Thrush System gives precise control of temperature for hot water heating, completely eliminates wasteful overheating and assures that continuous feeling of well-being due to the constant presence of radiant heat.

RADIANT CEILING PANELS

Thrush Controls are economical, in both installation and operating costs.

RADIANT FLOOR PANELS

Thrush Controls provide continuous warmth with economical Circulator operation.

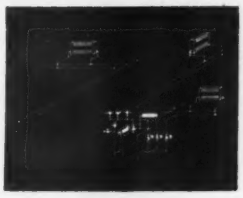


RADIANT BASEBOARD

Thrush Controls maintain comfort, compensate for outdoor weather changes.

RADIATORS · CONVECTORS

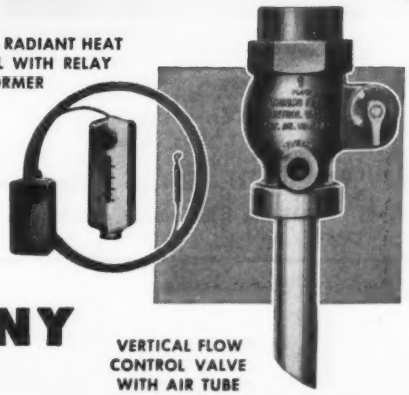
Uniform Heat is always present with Thrush Flow Control System on the job.



ZONE CONTROL

Inexpensive zoning with a Circulator, Flow Valve, and No. 201 Control for each zone.

NO. 201 RADIANT HEAT CONTROL WITH RELAY TRANSFORMER



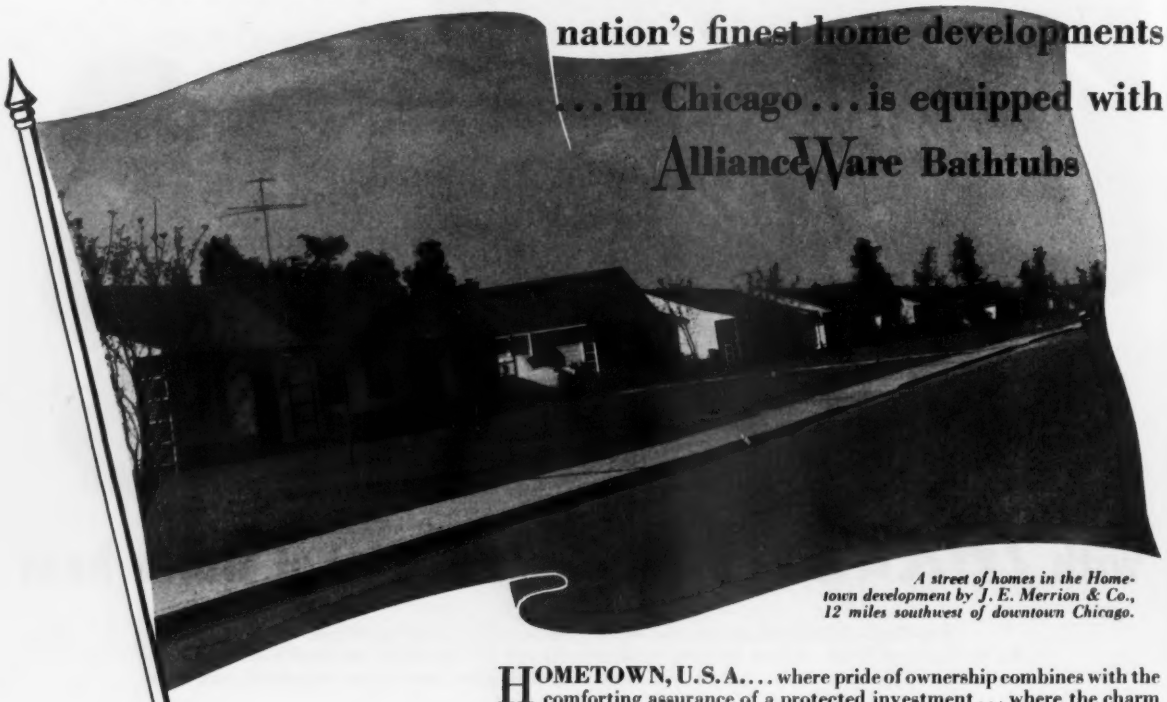
VERTICAL FLOW CONTROL VALVE WITH AIR TUBE

Ask your wholesaler or write dept. A-6

H. A. THRUSH & COMPANY

PERU · INDIANA

Hometown, U.S.A. Another of the nation's finest home developments ... in Chicago ... is equipped with AllianceWare Bathtubs



A street of homes in the Hometown development by J. E. Merrion & Co., 12 miles southwest of downtown Chicago.

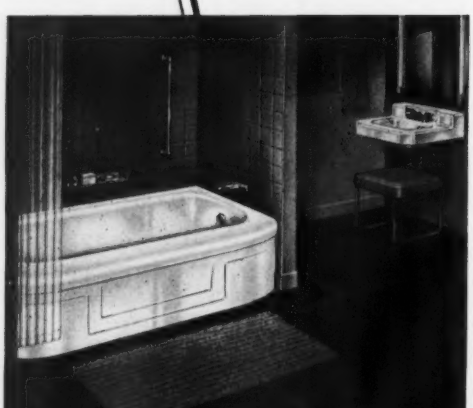
HOMETOWN, U.S.A.... where pride of ownership combines with the comforting assurance of a protected investment ... where the charm of friendly suburban living is matched by the convenience of a great city at your very doorstep ... where every house enjoys a lovely vista of gently curving streets and drives. HOMETOWN, U.S.A., planned and built for the veteran to raise his family as a family should be raised, in God's good outdoors—in a warm and neighborly atmosphere of community pride.

In Chicago's HOMETOWN in the vicinity of Crawford Avenue and West 90th Place, several hundred dwelling units of the planned 1600 units that are already occupied or nearing completion are equipped with AllianceWare bathtubs.

Most important among the essentials of modern living in the American way is modern home equipment—modern bathrooms and modern kitchens. There are sound reasons for the choice of AllianceWare porcelain-on-steel sanitary ware by leading builders. Modern styling, stainproof surface and choice of colors in AllianceWare enhance the beauty of bathrooms, large or small.

Practical details of AllianceWare construction, such as exact dimensions, wall guard flange that stops water leaks around the tub at the wall line, and anchor lugs which prevent shifting or settling of tub are added values which explain why AllianceWare is preferred by many architects and builders.

Forward-looking plumbers who want to keep their business coming their way are finding profit and prestige with AllianceWare. Write for complete details.



Bathroom equipped with an AllianceWare bathtub and an AllianceWare lavatory

HOMETOWN is being erected by
J. E. Merrion & Company
Emil J. Minx, *Architect*

ALLIANCEWARE, INC. • Alliance, Ohio

Bathtubs • Lavatories • Sinks

AllianceWare
PORCELAIN ON STEEL

FOR LEAKPROOF, TROUBLE-FREE PIPE RUNS

Cut-a-way view of a Walseal Tee showing ring of silver brazed alloy, and completed Silbraz joint.

Specify Walseal* Products

On all types of piping jobs where Type "B" copper or red brass pipe is used, trouble can be avoided by installing Silbraz* joints — made with Walseal valves, fittings and flanges.

Threadless, patented Silbraz joints are silver brazed (not soft soldered) pipe joints that are leakproof, trouble-free — permanent . . . connections that will not creep or pull apart; that literally join with the piping system to form a "one-piece pipe line". Thus, these modern joints eliminate the need for maintenance and costly repairs — especially important where lowered operating costs are imperative.

For complete details on the modern Silbraz joint, made with Walseal products, write for a copy of Walworth Circular 84.

*Patented — Reg. U. S. Patent Office.

Recommended for

- Hot and Cold Water Circulating Systems
- Boiler Feed Lines
- Steam Return Lines
- Condensate Lines
- Low and High Pressure Air Systems
- Lubricating Oil Circulating Systems
- Industrial Gas Piping
- Solvent and Vacuum Piping Systems

Make it a "one-piece pipe line" with WALSEAL

WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

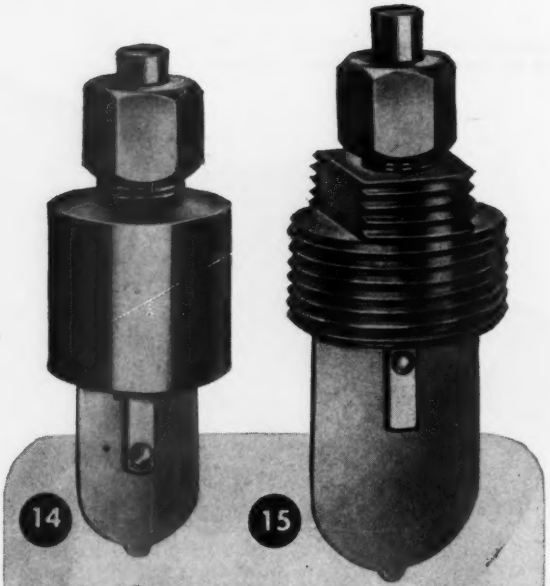
MAID-O'-MIST brings you a new money-saving idea!

Now, no need for large stocks of "complete" balancing fittings . . .

THESE NEW BALANCING VALVE ADAPTER UNITS ARE QUICKLY INSTALLED IN STOCK-SIZE COPPER, BRONZE OR CAST IRON TEES ...FOR ALL YOUR FORCED HOT WATER HEATING INSTALLATIONS!

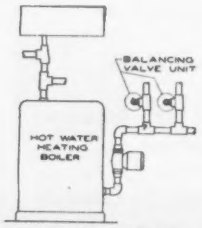
They're simple, fool-proof and what money-savers! No longer any need to carry a large stock of square head cocks and balancing fittings on hand. These new Maid-O'-Mist units are all you need.

These Adapter units, quickly soldered or sweat-fitted into copper and bronze tees, or threaded into cast iron tees, regulate the flow of hot water through radiators, convectors, baseboard panels, radiant coils, return mains, and branches. Can be inserted in side outlet or run of tee of the same pipe size to complete either a straightway or angle balancing valve. Precision made of non-ferrous metals. Simple balancing adjustment requires only a screw driver.

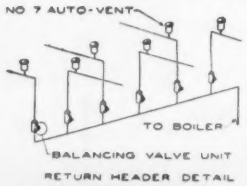


NO. 14 BALANCING VALVE ADAPTER UNIT for use with 3/8", 1/2", 3/4" and 1" nominal copper or bronze pipe size.
NO. 15 BALANCING VALVE ADAPTER UNIT for use with 1/2" and 3/4" cast iron tees.

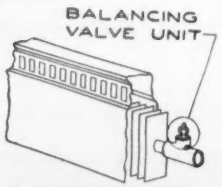
Full free flow through the tee. No restriction except for the balancing required.



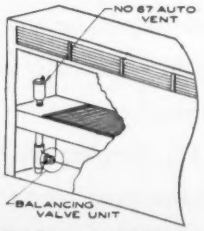
Return Header Detail



Radiant Header Detail



For Baseboard Radiators



For Convector Radiators

MAID-O-MIST Inc.
HEATING SPECIALTIES

AUTOMATIC HUMIDIFIERS . . . . . AUTO-VENTS
WATER LINE CONTROLS . HEATING SPECIALTIES

MAID-O'-MIST, Inc.

3217 NORTH PULASKI ROAD . CHICAGO 41, ILL.

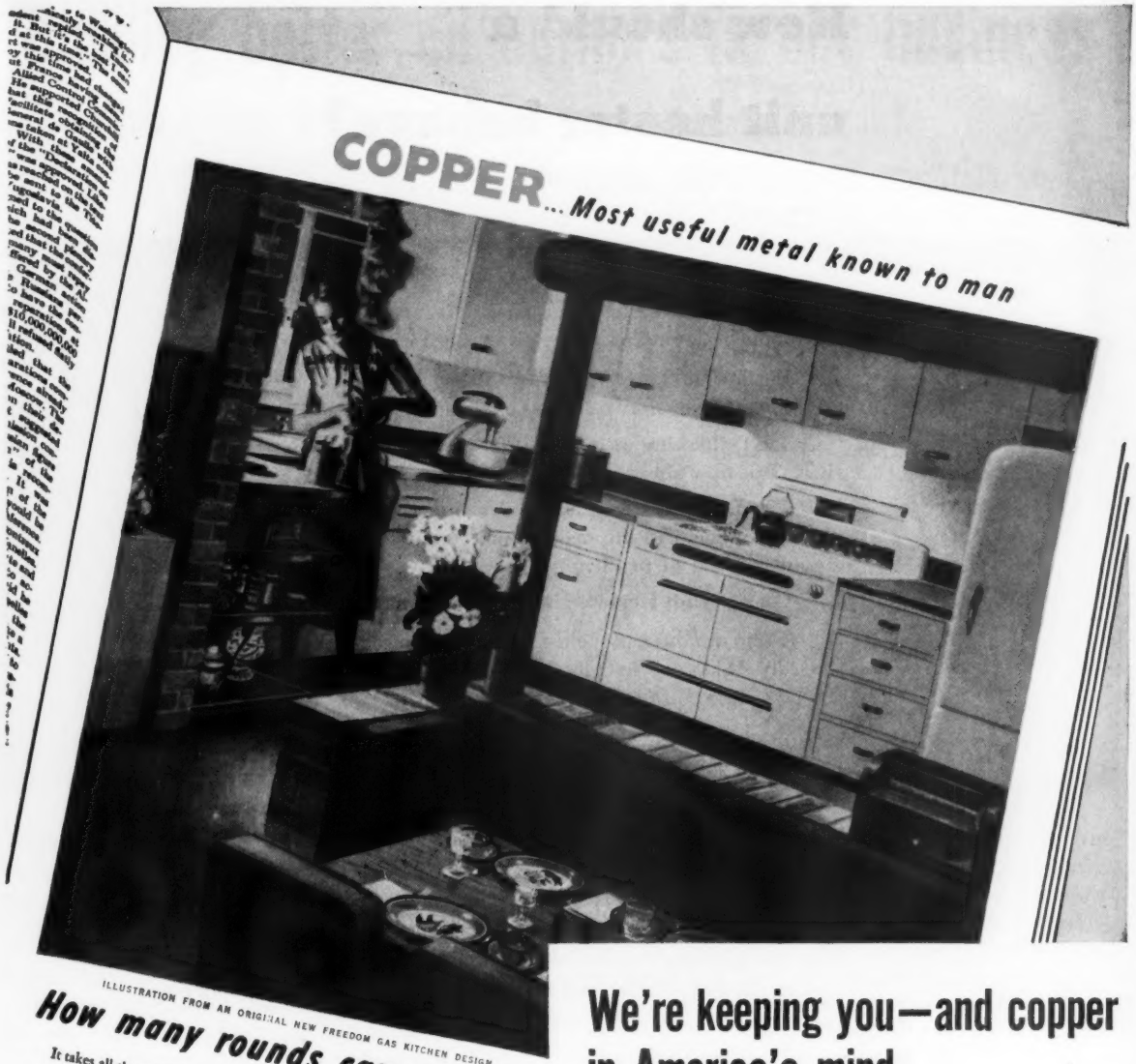


ILLUSTRATION FROM AN ORIGINAL NEW FREEDOM GAS KITCHEN DESIGN

How many rounds can your kitc

It takes all the copper in your kitchen—in your refrigerator, range, washer, mixer, toaster—to make the ammunition a .50 cal. machine gun fires in less than a minute!

This fantastic ratio of war to peace—one B-29 to 1,670 electric ranges, one tank to 47 refrigerators—is a problem that is straining every resource of the copper industry.

Despite this enormous effort, it is impossible to provide enough copper, br bronze for our military needs and civilian wants as well.

Because there is no real substitu man's most useful metal . . . with its workability and strength, high resistan corrosion, complete immunity to unusual ability to conduct heat and el tricity . . . copper and its many alloys m

First in Copper, Brass and Bronze

We're keeping you—and copper in America's mind

These full-page, full-color Anaconda advertisements, appearing in *The Saturday Evening Post* every month, are telling the people of America—your customers—why copper normally used for building homes is now so urgently needed to build America's defenses.

They explain to your customers why at the present time you can't, in so many cases, supply the copper they would like to have—that you would like to install. They remind people that no other metal can equal copper in making modern living easier, more enjoyable.

If you would like copies of this or other *Post* advertisements in the series for your own use, just write to: The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

5146A

Nothing serves like ANACONDA®
COPPER TUBES

How should a unit heater behave?

It should always be on its toes to give you all the heat it can get from its heating element.

It should be efficient and powerful. That is, it should direct and control the heat, putting it where it's needed without drafts or dead spots.

But it should be thrifty, too, to keep bills down. And it should be good looking, yet sturdy enough to stand up for years.

That's looking at it, of course, from your customer's point of view. But how about you?

If you're a distributor, you're interested in all these features, plus one more. An important one. A unit heater should allow you a good margin of profit.

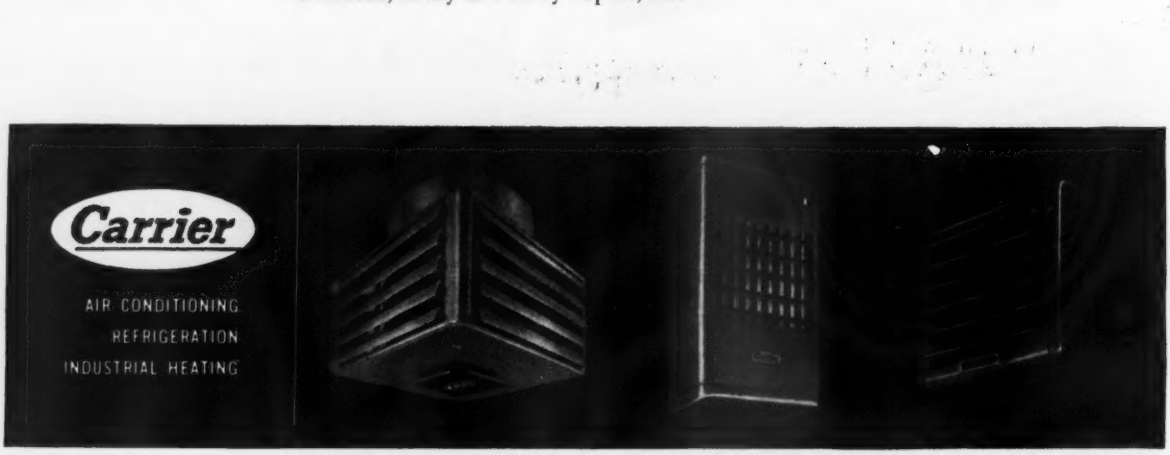
Carrier Unit Heaters give *everyone* what he wants.

There are three propeller fan types for every kind of job. Each is ruggedly built and soundly engineered. Their capacities range from 21,000 to 500,000 Btu's per hour.

For heating and ventilating large enclosed areas, there are Carrier's blower fan type Heat Diffusers—capacities up to 1,570,000 Btu's per hour.

It's good business making a Carrier installation. It pays off in customer satisfaction and in profits, too. For information, write Carrier Corporation, Syracuse 1, New York.

Carrier Industrial Heating Equipment is playing an important role in our present defense actions just as in the case of World War II. This type of equipment is used almost exclusively to economically provide heat in plants producing war materials, as well as in military buildings, barracks, Army and Navy depots, etc.



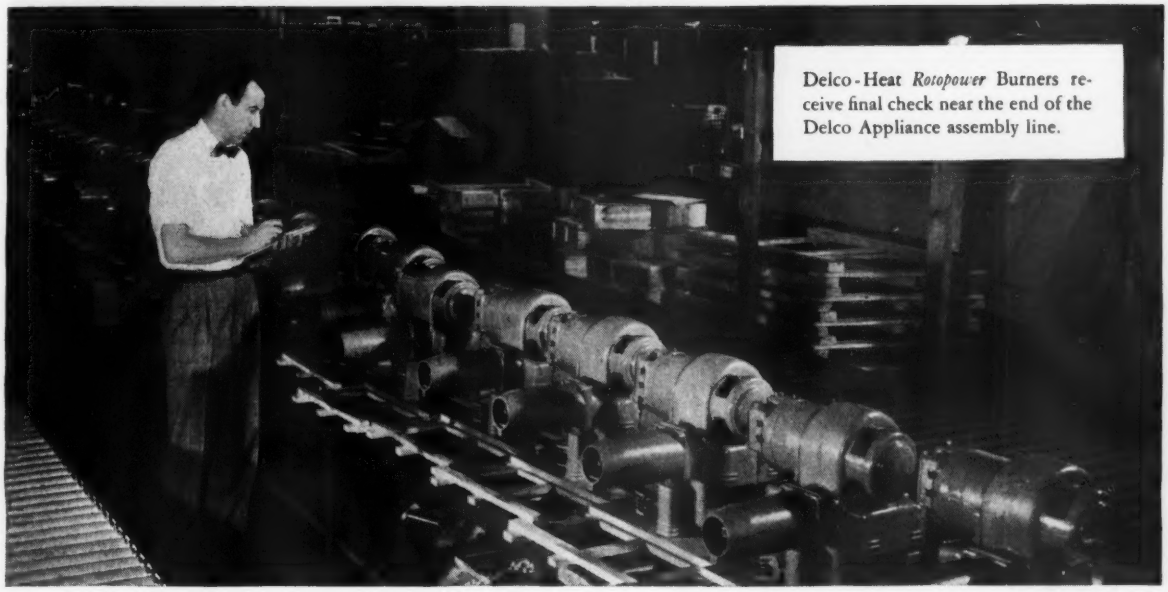
Carrier 46S Four-way Directed-flo Unit Heater. Best on the market for jobs calling for quick heat from high ceiling suspension. Delivers heated air to the floor line from heights up to 40 ft. Effective range from any of its four sides—up to 100 ft. Heat direction in any quantity at any angle. With steam or hot water. Capacities: 49,000 to 500,000 Btu's per hour.

Carrier 46T Gas-fired Unit Heater. Most practical gas-fired unit at the price. AGA approved. Aluminized Steel heat exchanger and combustion chamber welded together into one leakproof assembly. Very, very economical. With LP gas—and manufactured, mixed and natural gases. Seven sizes. Capacities: 70,000 to 230,000 Btu's per hour.

Carrier 46U Horizontal Discharge Unit Heater. The smartest looking unit that ever came off a drafting board—yet so rugged it's right for garages, factories, machine shops, etc. Single-row coil construction offers less air resistance, reduces power consumption, helps slash heating bills to a minimum. Steam or hot water. Capacities: 21,000 to 200,000 Btu's per hour.

Building better oil burners is our business

Delco-Heat "Rotopower" Burners are integrally designed to insure more efficient operation



Delco-Heat *Rotopower* Burners receive final check near the end of the Delco Appliance assembly line.

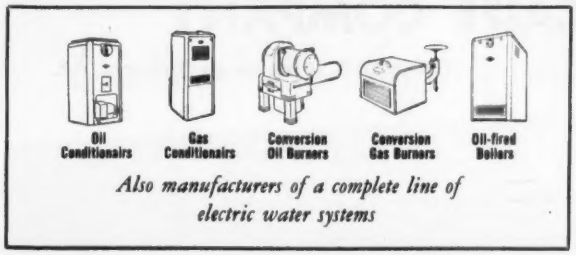
Delco-Heat "PB" Oil Burners (with the famous *Rotopower Unit*) differ from most other burners in one important way: whereas many oil burners include component assemblies made by outside manufacturers, these Delco-Heat oil burners are *completely designed and built in one factory*—the Delco Appliance plant in Rochester, New York.

The exclusive *Rotopower Unit* is typical of the advantages that this "one-factory" construction adds to the "PB" Burner. For the *Rotopower* unit includes every one of the moving parts of the burner—actually contains the Rigidframe motor, fan, oil pump, Thin-Mix fuel control and oil filter, all in one compact unit. And the *Rotopower* unit fits into the burner assembly like a cartridge, and allows quick and easy removal for inspection or adjustment.

The precision-machined steel nozzle is another feature designed specifically for the "PB" Burner. This nozzle, together with the Delco-Heat combustion head (integrally cast in position as part of the air tube), assures efficient mixing of the air and oil spray for complete combustion with either catalytic or distillate fuels. With features like these, it's no wonder that the "PB" Burner has such a long, service-free life.

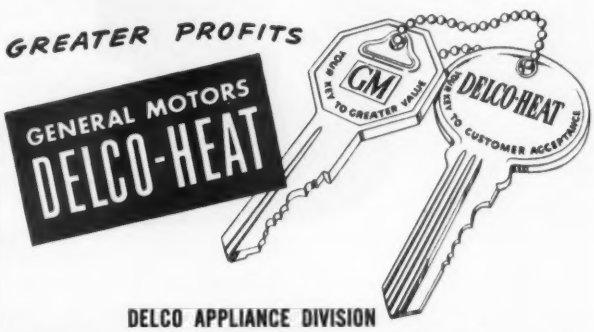
Because all Delco-Heat products must conform to General Motors exacting standards, the Delco-Heat Retail Distributor can sell products of unmatched quality. And because he offers a complete line, at competitive prices, he has the best sales opportunities in the home heating field.

The Delco *Rigidframe* motor is so free from vibration that a coin can be balanced on top of a Delco-Heat Oil Burner while it is running.



Also manufacturers of a complete line of electric water systems

YOUR KEYS TO GREATER PROFITS



DELCO APPLIANCE DIVISION
General Motors Corporation • Rochester 1, New York

THE SECURITY OF YOUR BUSINESS **IS BUILT UPON QUALITY PRODUCTS**

Scaife

test procedures

assure trouble-free service in your customers' homes

At various points in the manufacturing process, every Scaife product is subjected to a rigid series of tests. Welding and galvanizing quality, raw material quality and pressurizing —these are only a few of the items thoroughly examined and checked.

These test procedures pay dividends to you, for Scaife products not only offer a good initial return but also develop the customer good will which leads to profitable long-range business on other products. For the future of *your* business, rely upon the high quality and dependability of Scaife products.

FOUNDED S 1802

SCAIFE COMPANY

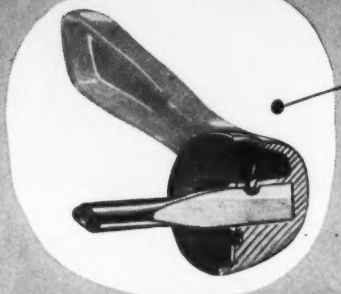
OAKMONT (Pittsburgh District), PA.

WHEN SATISFACTION IS AT STAKE

USE **CRAMPTON**

Patented FLUSH TANK LEVERS

with Staked-in Construction



POTTERIES, JOBBERS, PLUMBERS! ***Crampton staked-in construction gives you finer quality, greater value and better service than any flush tank lever on the market.***

• Only Crampton Flush Tank Levers give you exclusive "staked-in construction"... guarantee long service and satisfied customers. On Crampton pre-assembled levers, the brass lift arm is firmly *staked* into the handle, making arm and handle one solid unit. Years of use won't budge it. There are no screws to loosen . . . no knurls to wear . . . nothing to "give".

Master plumbers know the advantages of Crampton flush tank levers. These pre-assembled units are quick and easy to install . . . sturdy and handsomely designed. Now at new lower-than-ever prices, they are in top demand for original equipment and replacement.
Check your stocks now.

Quality Plumbing Hardware

GRAND RAPIDS BRASS COMPANY Grand Rapids, Mich.
Division of Crampton Manufacturing Co.

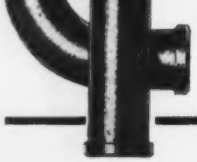
Why stop quality at the foundation?

You use **cast iron soil pipe** and fittings for permanence in soil and waste stacks. Why not assure this permanence for the *complete* job by continuing from the foundation to the street sewer with this same time-tested material.

When you use **cast iron soil pipe** – and fittings – throughout, there's no chance for come-backs on the quality of your work. That's because cast iron is a material that has withstood the test of time in countless plumbing applications.

A few dollars saved by not using permanent **cast iron soil pipe** and fittings, all the way through the job, may turn out to be a loss to your reputation and to the owners pocket book. So for a quality job from roof vent to street sewer, make it cast iron – and be sure!

CAST IRON SOIL PIPE INSTITUTE
Heurich Building, 1627 K. St., N.W., Washington 6, D. C.



CAST IRON SOIL PIPE INSTITUTE

This advertisement is sponsored by

Alabama Pipe Company
The American Brass & Iron Foundry
Anniston Foundry Company
Anniston Soil Pipe Company
Attalla Pipe & Foundry Company, Inc.
Buffalo Pipe & Foundry Corporation
The Central Foundry Company
Charlotte Pipe & Foundry Company
Combustion Engineering—Superheater, Inc.
Crown Pipe & Foundry, Inc.
The Eastern Foundry Company
East Penn Foundry Company
Emory Pipe & Foundry Company
Hajoca Corporation
Herco Foundry, Inc.
T. C. King Pipe & Foundry Company
Pacific Cast Iron Pipe & Fitting Company
Peerless Pipe & Foundry Company, Inc.
Reading Foundry Company
Rich Manufacturing Company of California
Rudisill Foundry Company
Sanitary Company of America
Somerville Iron Works
Tyler Pipe & Foundry Company
Walker Machine & Foundry Corporation
Western Foundry Company
Williamstown Foundry Corporation

The Whitest White is Universal·Rundle

Here's "white" quality that customers can see —*nationally* advertised by U/R!

Arctic White bathroom fixtures by Universal-Rundle are literally in a class by themselves—no others can match the flashing snow-white of these world's finest bathroom fixtures: actually *whiter* by scientific test, than any other white fixtures on the market!

We'll Tell the World! To show off the dazzling beauty of the world's whitest white, Universal-Rundle's big, colorful advertising in THE SATURDAY EVENING POST and BETTER HOMES & GARDENS features decorator-designed bathrooms by Ving Smith, famous New York designer and decorator. (Other advertisements will spotlight U/R's famous colorware.)

Catalog celebrates 50 years of Quality! New U/R Catalog shows the complete line of bathroom and kitchen fixtures. Gives plans, drawings, roughing-in specifications, and a world of help for everyone who sells, installs, recommends or specifies fixtures. Write today on your letterhead. (You can also see the new Universal-Rundle catalog in Sweet's Builders File!)

Color on the beam!—The units of a U/R colorware suite match closer than the human eye can see!

The strongest bond between surface glaze and body in U/R fixtures, means highest resistance to chipping.

"Harder than steel" surfaces are easy to keep clean, scratch-free, and sparkling bright in U/R ware.

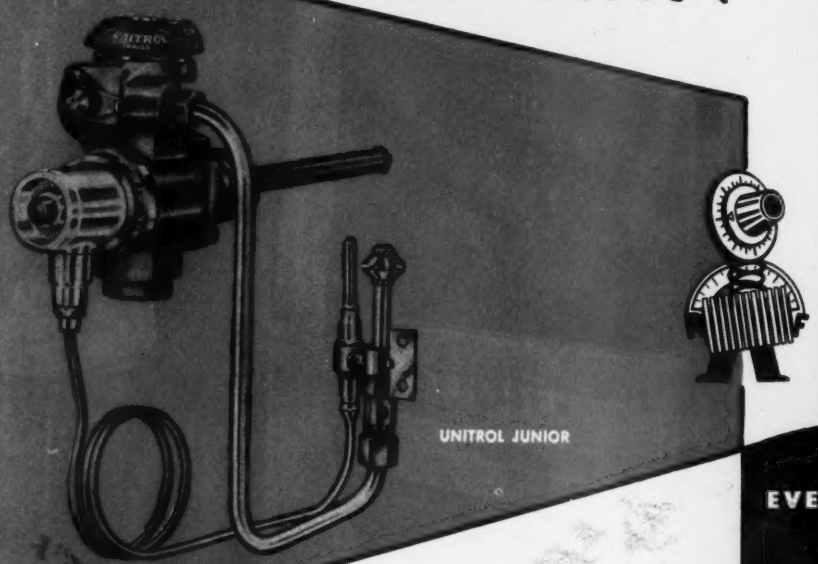
Who is Universal-Rundle? U/R is the half-century young pioneer of many industry "firsts"; colored vitreous china, one-fire tunnel-kiln firing, complete laboratory control of production, and many others.

Plants in Camden, N. J., Milwaukee, Wisc., New Castle, Pa., and Redlands, Calif.

Universal·Rundle

UNIVERSAL-RUNDLE CORPORATION, DEPT. 2, NEW CASTLE, PENNSYLVANIA

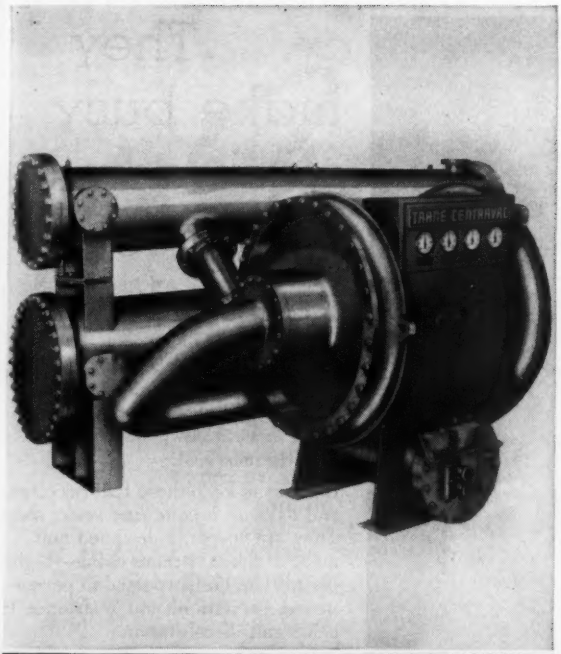
ROBERTSHAW
GRAYSON
Controls



EVERYTHING'S
UNDER
CONTROL

Water Heater Manufacturers, who know the sales value of proven product performance, continue to specify Robertshaw-Grayson Controls for all model requirements. Absolute assurance of the highest standards of operating efficiency increases the buyers preference for the water heater equipped with the right Robertshaw-Grayson Control.

ROBERTSHAW-FULTON CONTROLS COMPANY
Factories at
Youngwood, Pennsylvania — St. Louis, Missouri
Knoxville, Tennessee — Bridgeport, Connecticut
Lynwood, California — 3000 Imperial Highway



The Trane Hermetic Centrifugal Refrigerating Unit—Six models starting at 45 tons.

Trane Climate Changers—Twenty-four standard combinations of coils, fans, humidifiers, filters, dampers, 450 to 16,250 cfm

Industrial . . . Commercial . . . Institutional . . . Process

Trane Air Conditioning Serves Everywhere in Buildings

A unit or a central system . . . chilled water or DE refrigerant . . . one zone or many—Trane makes products for use in air conditioning systems of every type.

Refrigeration Units—Centrifugal or reciprocating, Trane makes *both* types. The new centrifugal unit is a complete hermetic source of chilled water in one package. Together with the new 1951 Trane Reciprocating Compressor and Condensing Units, Trane offers a complete line of refrigerating products for unbiased equipment selection.

Central Equipment—An expanded line of Centrifugal Fans teams up with the famous Trane Heating and Cooling Coils for an infinite number of balanced combinations. Fans up to 109", coils up to—what size do you want? Can deliver wide ranges of temperature and cfm.

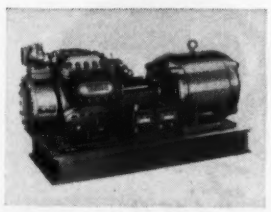
Zone Units—The extensive Trane Climate Changer line provides all functions of air conditioning—singly or in any combination. Elements can be added after installation. This line also includes the Multi-Zone Climate Changer capable of conditioning up to six separate zones with just the right degree of heating or cooling in each from a single unit.

Big Building Systems—UniTrane and Custom-Air systems of air conditioning provide complete flexibility in meeting the varied requirements of multiroom, multistory installations. Individual control of room units and filtering of all outside and recirculated air are only two of the unique advantages of these exclusive Trane air conditioning methods.

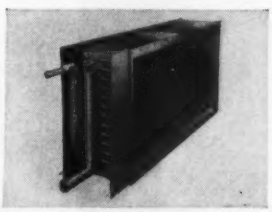
For zones best handled by self-contained air conditioners, Trane makes a brand new line of packaged units requiring only the simplest electrical and water connections for installation.

Whether it's industrial, commercial, institutional or process, Trane Air Conditioning Serves Everywhere in Buildings.

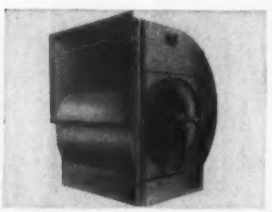
Whatever your heating, cooling, ventilating or air conditioning problem is, look for the answer in the complete Trane line.



Trane Reciprocating Compressor and Condensing Units—Six models up to 50 tons in capacity.



Trane Cooling Coils—For use with chilled water or direct expansion refrigerants.

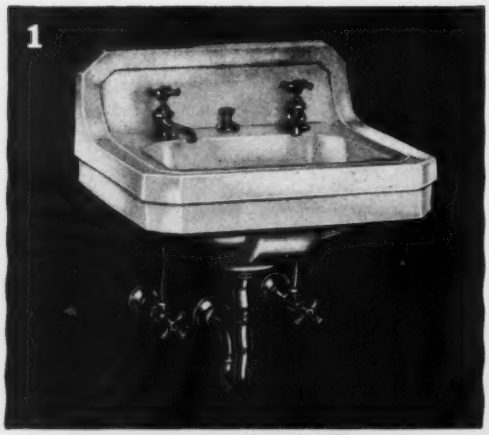


Trane Centrifugal Fans—In Class I and II construction—both BI and FC design.

TRANE

MANUFACTURING ENGINEERS OF HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

THE TRANE COMPANY, LA CROSSE, WIS.
Eastern Mfg. Division, Scranton, Pennsylvania
Trane Company of Canada, Ltd. . . . Toronto
OFFICES IN 80 U.S. and 14 CANADIAN CITIES



They make busy washrooms easier to keep **clean**

You'll get thanks every time, when you point out that the installation of Case quality washroom fixtures helps to hold down washroom *maintenance cost.*

It's easy to keep these fixtures clean and to *clean around and under them.* They are specially designed and made of finest vitreous china—highly lustrous and unsurpassed in permanence, sanitation, and resistance to acids and discoloration.

An added factor in long service life is *the excellent mechanical construction* of Case fixtures. Fittings are especially designed for the needs of individual fixtures. Fixtures are available with chair carriers—a wise *safeguard in many installations.*

Your Case distributor will do his best to serve your needs at all *times. For his name, consult your* Classified Telephone Directory under *"Plumbing Fixtures"—or write* W. A. Case & Son Mfg. Co., 33 Main St., *Buffalo 3, New York. Founded 1853.*

1 AVON* #900. Wall hung vitreous china lavatory with back. Square basin, front overflow, anti-splash rim.

2 CASE WYNGATE* #600. *Lavatory.* Square basin. Anti-splash rim, heavy wall hanger.

3 CASCO* #2335-A. *Vitreous China* Siphon jet pedestal urinal with chrome *plated flush valve, vacuum breaker.*

4 CASE #1600. Siphon Jet Flush Valve *Closet Combination with elongated bowl.*

5 CASE WALJET* #2100. Wall hung *Siphon Jet Closet with hard rubber open* front seat, concealed check hinge.

6 CASE CASCO* #2325-A. *Vitreous China* Wall Hung Washout Urinal with shields, *integral flush spreader and spud.*

*®

Case

Fine Vitreous China

At Press Time

JUNE • 1951

Last-minute news...and highlights of timely material in this issue

CIVILIAN PRODUCTION WILL NOT BECOME A "CASUALTY" while the nation is achieving production goals for the military and defense supporting programs, according to Manly Fleischmann, NPA administrator.

"We can do the rearmament job and still have enough facilities and materials left for adequate production of most civilian goods," Mr. Fleischmann said last month.

Nevertheless, it's apparent that the full impact of defense production still lies ahead. There'll be a considerable drain on materials and facilities for the next year and a half to two years.

THE PRESENT PLAN is to restrict the use of CMP materials—steel, copper and aluminum—for most consumer durable goods to percentages of consumption during the base period (the first six months of 1950). The percentages: Steel, 70 percent; copper 60 percent; and aluminum, 50 percent.

This would not be a limit on unit production; rather, a limit on the amount of the critical materials which could be used. There's been some talk of unit limitation, but so far it's just talk.

If essential industries (other than direct defense) find it impossible to operate in the "open end" Controlled Materials Plan, a 100 percent CMP would be established.

The government doesn't want any more regulations than are necessary, but is still determined to follow the "guns and butter" policy.

Allotments will be given to essential civilian industries if such measures are required.

A SPECIAL MESSAGE TO DOMESTIC ENGINEERING READERS: Your editors were in Washington last month and had quite a talk with the National Production Authority on the subject of plumbing and heating and the defense program.

The results of the talk, including a special message to Domestic Engineering readers, are given on pages 83, 84 and 85.

MORE MAINTENANCE, REPAIR AND OPERATING SUPPLIES AVAILABLE TO P-H CONTRACTORS: Since MRO limitation was set on a dollar-expenditure basis, you weren't getting all that was allowed because of price increases over the 1950 base period.

Therefore, you can now add 20 percent to your 1950 MRO purchases, divide by four and establish your quarterly quota.

Other changes in Regulation 4: The use of the DO-97 rating for capital additions is limited to 10 percent of the quarterly quota or to $750, whichever is higher. Previously you could spend all your quota on minor capital additions if so desired.

If you have more than one store, you now have the option of deciding whether your quota shall be established for each store or for the company as a whole. Previously, quotas were on a single store or plant basis.

Remember, you can't use DO-97 rating for personal or household use.

CONSTRUCTION CONTROLS ARE EXTENDED: An amendment to order M-4 requires that permission be obtained before any building construction using more than 25 tons of steel is started.

Before the NPA will grant an authorization to start construction on a building, it will consider (1) whether the project will further the defense effort; or (2) whether the project is essential to the maintenance of the public health safety or welfare.

A STRAW IN THE WIND? There were signs last month that the homebuilding outlook for 1951 might not be far off the government's 850,000 unit prediction.

In fact, home builders descended on Washington in some alarm. As late as thirty days ago they were certain they could pound together a lot more houses than government estimators expected. A sudden lack of mortgage money made a lot of them change their mind.

Here are the facts and figures to date: In April, 88,000 new permanent nonfarm dwelling units were started. The figure was 5 percent below March and 33 percent below April a year ago. So far this year (the first four months), 346,900 units have been started. Thus, activity is still at an annual rate of over 1,000,000 units.

At the moment, the issue has evolved itself into a debate between home builders and the government. Regulation X may be in for a going over from both sides.

YOUR CUSTOMERS WHO COOK WITH GAS will turn green with envy when they discover the new improvements built into automatic gas ranges in the past year.

Among the new features, according to the Gas Appliance Manufacturers Assn., are a top burner clock control (put the percolator on the stove when you go to bed, set the clock mounted on the backsplash—and when you get up the coffee's perked), an extra small burner for small cooking utensils, a built in griddle on the top of the stove and many others.

The association also reported figures on shipments of automatic gas water heaters: 209,100 units were shipped in April representing an 18.5 percent increase over the same month last year.

A NATIONAL AFFAIRS BULLETIN going to over 600 members and manufacturers in order to help them interpret new government regulations was announced last month by George T. Underwood, executive secretary of the American Institute of Wholesale Plumbing & Heating Supply Assns., Inc.

Mr. Underwood was formerly with the National Production Authority as head of the plumbing and heating section of the Building Materials Division. Harry G. Starr, who was acting executive secretary of the wholesaler group, will remain, temporarily, in a consulting capacity.

SCHOOL OF MODERN HEATING CELEBRATES FIRST ANNIVERSARY: Last month a milestone in the heating industry was reached. During a three-day session in the Palmer House in Chicago, the "School of Modern Heating" rounded out its first year of existance.

Sponsored by The Institute of Boiler and Radiator Manufacturers, the school reached 44 different cities and 2,500 students. The course is aimed at anyone in the industry who is interested in getting the right heating equipment for every job and to accomplish it in the simplest and quickest way possible.

Interested persons can get complete information by writing The Institute of Boiler and Radiator Manufacturers, 60 East 42nd Street, New York 17.

WHAT'S AHEAD FOR HEATING CONTRACTORS? The annual meeting of the Heating, Piping and Air Conditioning Contractors Assn., held last month in Washington, provided several interesting answers to the question.
For a complete report on the meeting, see pages 90 and 91.

DO YOUR SHOWROOM DISPLAYS LACK THAT "EXTRA" SOMETHING? If so, you'll probably want to check your displays with "Displays That Sell." You can do it by turning to page 96 and reading the article on display ideas for domestic engineering dealers.

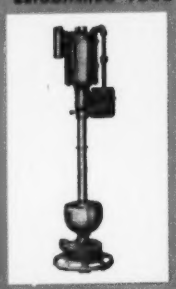
THERE ARE SOME INTERESTING COMMENTS ON PRICE ADVERTISING in the feature beginning on page 88. The pro's and con's of the subject are discussed by various domestic engineering dealers in an interesting and informative article.

Penberthy automatic electric Sump Pumps are easier to sell

Sump pumps are installed for protection . . . protection against water damage . . . protection of health. No sensible buyer wants to gamble on protection of this sort. He wants to be sure he gets protection when he pays for it. Hence, the unparalleled reputation for reliability of Penberthy Automatic Electric Sump Pumps makes them easier to sell.

Once your prospects know about the copper and bronze construction—the motor specially impregnated to resist moisture—the dependable switch—the scientifically balanced impeller and the many other Penberthy features—they want Penberthy Automatic Electric Sump Pumps.

Penberthy Injector Company
DETROIT 2, MICHIGAN
Established 1886 • *Canadian Plant, Windsor, Ontario*



PENBERTHY EXPLOSION-PROOF AND TOTALLY ENCLOSED SUMP PUMPS

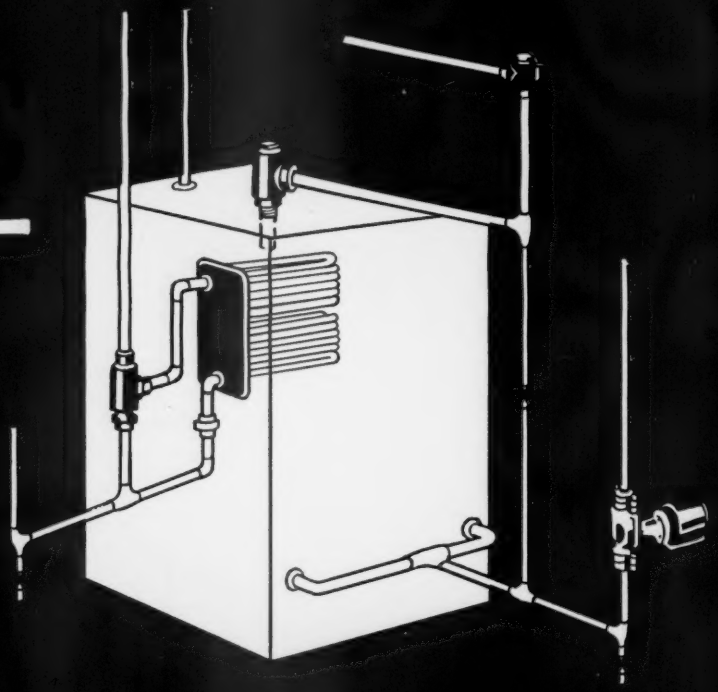
Motor and switch have Underwriters' approval for hazardous locations including gasoline, solvent vapors, metal and grain dust, natural gas, etc. Write for Specification 4929.

MADE IN 7 SIZES

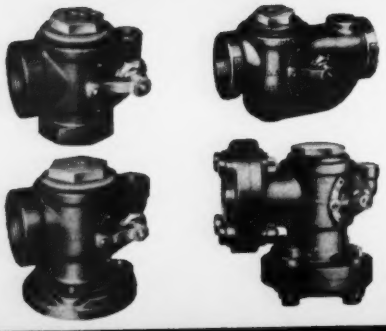
Constructed of Copper and Bronze Throughout

Carried in stock by jobbers everywhere

4133



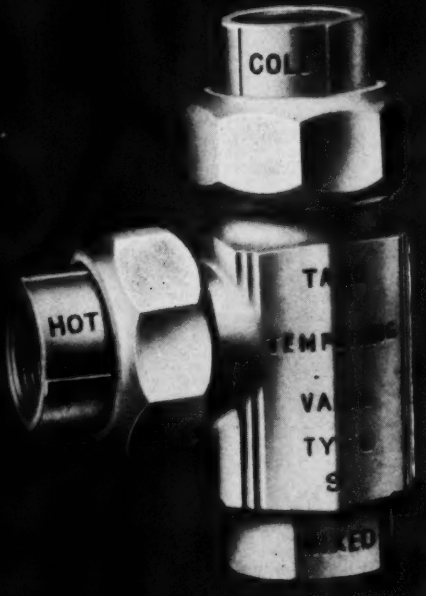
TACO FLOCHEKS



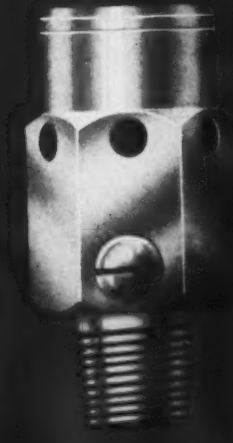
TACO-MATIC VALVE

TACO FLOW REGULATOR

TACO CIRCULATOR

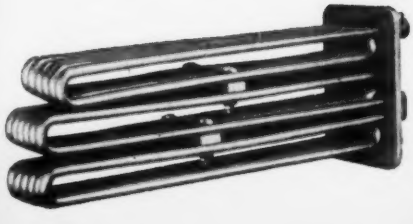


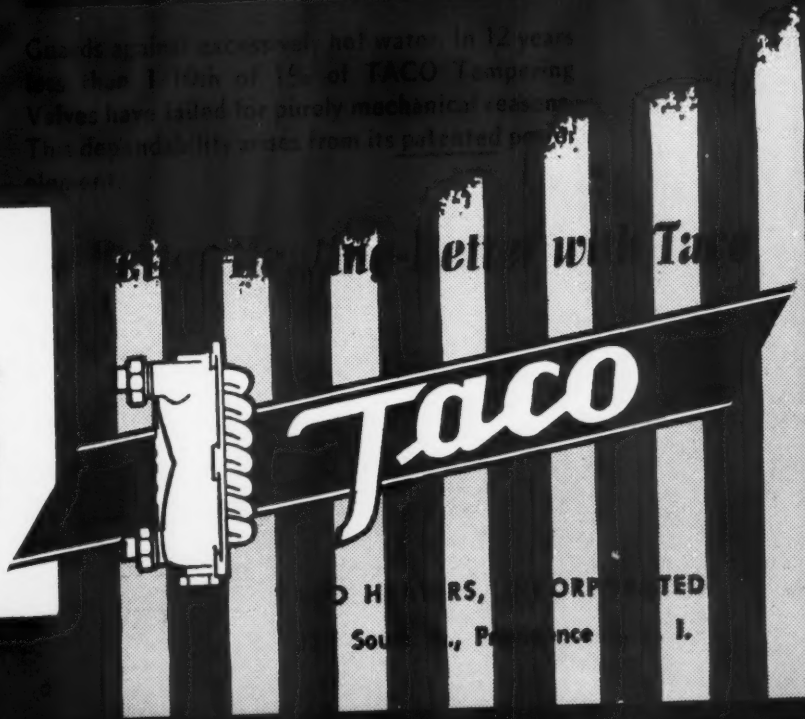
TACO VENT



TACO TEMPERING VALVE

BILTIN TANKLESS TACO





EXTRA FEATURES . . . EXTRA SALES . . . EXTRA PROFITS

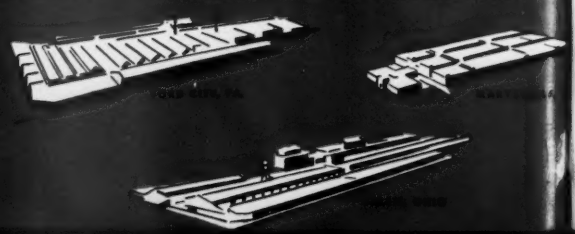
Note the features . . . and you'll see why the Eljer Legation Bathtub is in such demand, is so easy to sell. This *special* tub . . . an outstanding profit maker in Eljer's complete bathtub line . . . offers your customers *plus* advantages found in no other tub. It gives *you* the opportunity to make sales that your competitors cannot make . . . enables *you* to cash in with extra-dollar profits.

Here are Legation features: thick, vitreous enamel over a *rugged, rigid, cast-iron base;* comfortable end-seat; low front rim; wide, flat bottom for safety's sake; easy-to-clean rectangular shape; extra-wide front rim-seat; superb beauty; 5½′ length; white or pastel colors.

The Eljer Line also includes a complete assortment of recessed and corner tubs in many sizes. For information, see your Eljer Distributor or write to Eljer Co., Ford City, Pa.

It pays you, it pays us–because we specialize in Plumbing Fixtures and Brass

ELJER



Between Ourselves

June • 1951

—HIGHLIGHTS OF THE MONTH IN OUR INDUSTRY

Prettiest Plumber?

Who's the prettiest plumber in the nation?

As far as we're concerned, the comely miss shown in the photo below certainly rates consideration. We doubt that many will care to

dispute the point after a glance at the picture.

She's Lillian Ann Baumbach, the first master plumber—female, that is—in the Arlington, Va. area. Miss Baumbach works for her father, W. J. Baumbach who is head of the Baumbach Plumbing and Heating Company. The man-sized wrench she's hefting in the photo is no gag; the 21 year-old miss is service manager for her father's business.

Lillian is still single, but a girl with her looks and the ability to fix a leaky faucet probably won't have any trouble acquiring a man.

Freedom Month

In South Euclid, Ohio, the city's "Freedom Month" drive to eliminate outmoded methods of garbage collection resulted in the installation of 500 Hotpoint food waste disposers.

Following the trend in some other midwestern cities, South Euclid passed an ordinance requiring new homes to be equipped with electric food waste disposers. Then the city launched its "freedom month" drive with a parade led by a jalopy full of old garbage cans.

The manufacturer cooperated with displays in various stores, with units in actual operation; demonstrations were available for schools, civic groups, churches and other prominent organizations. Car cards, billboard and radio spots also were part of the promotion.

The Linde Plumbing Co. and Rhodes Plumbing Co. of the Ohio city handled the installations as well as participating in the city-wide campaign.

The South Euclid move illustrates the trend that is taking place across the nation to provide whole communities with sanitary and low cost garbage disposal facilities.

New England Wholesalers

The Plumbing & Heating Wholesalers of New England will hold a meeting in Oyster Harbors, Mass. on June 1-4, according to information received from George A. Schultz, executive secretary.

The program will feature several

George A. Schultz

prominent speakers, including a representative of the Office of Price Stabilization who will journey from Washington.

Home of Tomorrow

In Los Angeles, the public was treated to a glimpse into the future when they visited the "Home of

(Please turn to center of next page)

LETTERS TO THE EDITOR

FOR HEALTH AND SANITATION

Waukegan, Ill.—Your Illinois readers, as well as those in other sections of the country, will undoubtedly be interested in the enclosed postal card which we had printed and addressed to the House of Representatives in Springfield.

The card pertains to the legislation regarding licensed plumbers now pending here in the State of Illinois. We feel, of course, that it is necessary to have a law protecting the health and sanitation of the general public by restricting the installation of plumbing to licensed and qualified workmen.

Honorable Sir:

I would appreciate your voting **YES** on H.B. 665 Governing Plumbers License Law.

I feel it is a necessary law for the protection of public health and sanitation by restricting the installation of plumbing to licensed and qualified workmen. **"VOTE YES PLEASE".**

Signed _____

Address _____

City _____

In cooperating with the trade by printing this card *(see reproduction)*, we feel we can help to insure this necessary protection.

JAMES T. DIESI
Lake County Plbg. Supply Co.

ON WET VENTING

Chicago—I'm a regular subscriber to DOMESTIC ENGINEERING and certainly appreciate the abundance of information it contains.

I've noticed a number of articles on the subject of wet venting. The writer seems to be well versed in wet venting of plumbing fixtures, or what is sometimes called "the minimum code—the maximum risk."

The United States Bureau of Standards has approved wet vent-

(Please turn to top of next page)

(Continued from preceding page)
ing, with certain reservations, for actual installations. This approval was made for a purpose—to save vital materials and reduce the cost of plumbing installations. Neither are important to the health and well-being of the people.

Why take time in explanations of poor plumbing systems? Why not explain and illustrate the proper way of venting plumbing fixtures so that good plumbing may be understood and practiced?

Let's keep striving for better plumbing in all localities!

JAMES M. McGANN

• Domestic Engineering tries to keep its readers informed of all new developments in the industry and merely reported the above subject as such.

Other readers are invited to send in their opinion on the subject of wet venting. Address your comments to The Editor, Domestic Engineering, 1801 Prairie Ave., Chicago 16.

GETS THEM COMING OR GOING

Red Bank, N. J.—From time to time we've seen pictures in DOMESTIC ENGINEERING of billboard signs used by contractor-dealers around the country. Therefore, we are enclosing a photo of one of our two new signs with the thought that some of your other readers might be interested.

The signs are located on New Jersey highway No. 35 near Keyport, N.J. One of them faces traffic coming from New York, while the other one is below Red Bank and faces traffic coming from Asbury Park.

Thus, we figure we have our

name before our prospective customers whether they're "coming or going."

MARTIN J. McGUIRE

$$$$$ IN ONE-PIPE JOBS?

Santa Barbara, Calif.—Your article entitled "The Trend Is to Remodeling" in the April issue touches a subject dear to my heart.

As a consulting engineer for the past 12 years, I have been called in on hundreds of remodeling jobs involving one-pipe steam heating systems. I was told to modernize these systems by removing some of the objections inherent in this type of heating.

Since many building owners objected to the expense of changing over to two-pipe heating, I devised an equalizing radiator return trap for one pipe jobs. This trap allows water condensed by the radiator to flow back into the one-pipe steam riser to the radiator, without requiring that the steam supply to the radiator be either on or off or in any particular adjustment.

In other words, pressure inside the trap is automatically equalized so the radiator is constantly drained by gravity regardless of the degree of throttling of steam input to the radiator. The boiler gets its water right back (of course boiler water level controls should be installed to avoid low water damage) helping to avoid boiler damage.

Pounding and hammering in the radiators are avoided—they heat right up, and they can be throttled by hand without worrying about water damage.

I would like to know if your readers consider this idea to be practical, inasmuch as the cost for each radiator would be about $12.00 less labor, including the trap and fittings.

MICHAEL A. MILLER

• Since one-pipe systems are popular in many parts of the country, our readers are invited to give Mr. Miller the benefit of their experience with this type of system.

Domestic Engineering would like to publish letters from other readers concerning the practical aspects of the equalizing return trap devised by Mr. Miller.—Ed.

Home of Tomorrow

(Continued from preceding page)
Tomorrow," Southern California's newest residential showplace.

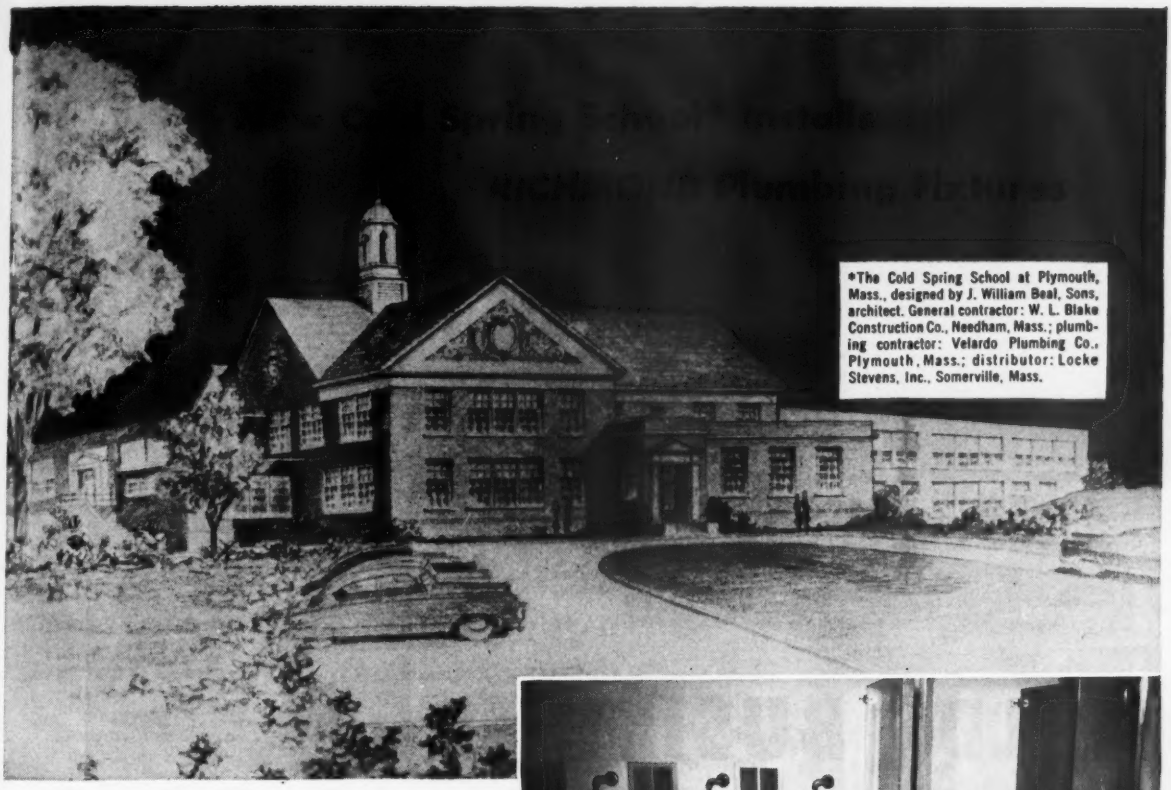
New materials, new colors, new textures, new conveniences are featured throughout the new home. Emphasis, however, is not on the gadget approach but on personable, comfortable family living.

Taking full advantage of California's mild weather, the home is designed for indoor-outdoor living with outside patios all a part of the living unit. Radiant heat is provided for the patio to take care of comfort on cool evenings.

The two bathrooms in the home are by the Crane Co., and are from the drawing board of Henry Dreyfuss, famous New York and Pasadena designer. For the master bath, Mr. Dreyfuss selected fixtures in French Grey and placed them against a background of grey and pink tile. The most recent addition to the Crane line of countertop lavatories, the Criterion, is set in tile and its round front is designed to blend smoothly with modern, up-to-the-minute tiling techniques.

Sponsored by local charities who receive proceeds from the exhibit, the "Home of Tomorrow" is expected to attract a lot of attention during the six months it will be open to the public.

Bob Penney, manager of Crane Company's Los Angeles branch, and Loretta Young of the movies are shown discussing the Crane Criterion lavatory in the master bathroom in the "Home of Tomorrow." The lavatory's fluted handles are of clear lucite and the spout is in brushed chrome.



*The Cold Spring School at Plymouth, Mass., designed by J. William Beal, Sons, architect. General contractor: W. L. Blake Construction Co., Needham, Mass.; plumbing contractor: Velardo Plumbing Co., Plymouth, Mass.; distributor: Locke Stevens, Inc., Somerville, Mass.

Section of Cold Spring School *wash room showing the batteries of Richmond* Delton Washout *Urinals (Plate No. G-353) and the Richmond* Spaulding Syphon Jet *Water Closets (Plate No. G-220).*

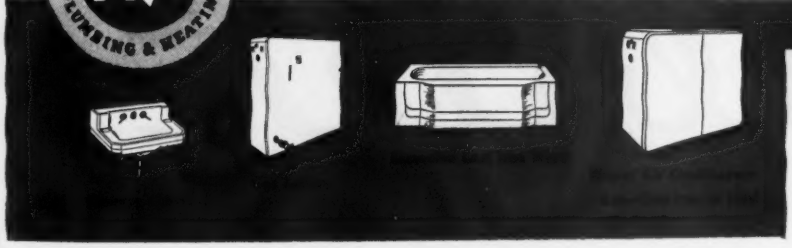
. . . Richmond vitreous china plumbing fixtures have been chosen for quality, low-cost operation and easy sanitary maintenance by the School Board, the architect and the builder. Attractive Richmond vitreous china is acid-resisting and long lasting.

By providing better sanitation, Richmond fixtures promote better health. Always remember—when quality and economy count . . . count on Richmond.

RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.

RICHMOND RR PLUMBING & HEATING



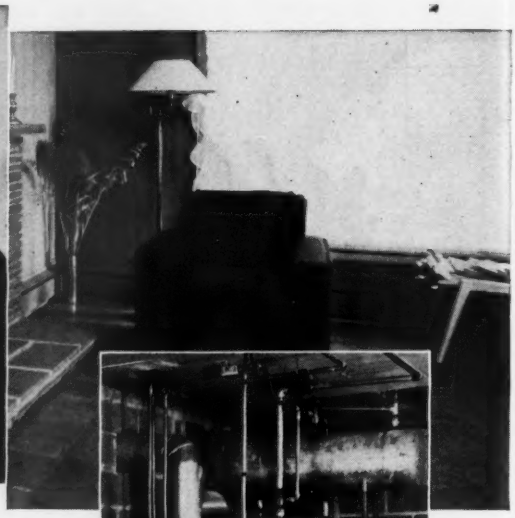
Richmond Radiator Company
19 East 47th Street, New York 17, N. Y. DE/n

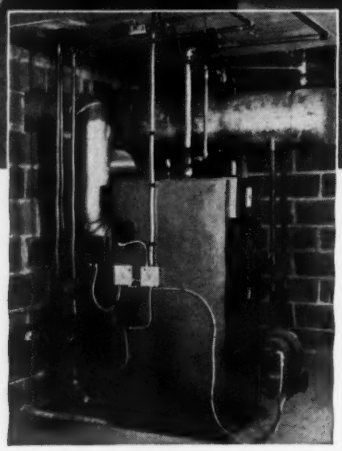
Please send me additional information and literature on the Richmond line of fine plumbing fixtures. No obligation, of course.

Name.....

Company.....

Address.....





Wallace H. Winckler (left), Mountainside, N. J., contractor, with two of his men are an installation "team" on Webster Baseboard Heating.

Upper right, Webster Baseboard Heating in a Winckler installation.

Lower right, Winckler basement installation. Webster Return Header Assembly, combining purge and balance valves in a single compact unit, serves three perimeter loops in this home.

BUILDS BUSINESS with True Perimeter Heating

The best of the new home building market—that's the business you want . . . and that's the business contractors are building with Webster Baseboard Heating. This true "perimeter" heating with forced hot water is proved in more than 15,000 installations. Leading contractors are getting this business *today*.

In Mountainside, N. J., Contractor Wallace H. Winckler tells home builders to "think of the years ahead."

"If you don't put in a good heating system now, you will have to live with your heating mistakes for many years to come."

Winckler, selecting his customers, made more than a dozen Webster Baseboard Heating installations in less than two years and is making others within the limits of materials now available. Yet, Mountainside has a population of 2,700.

Winckler's success is due in part to his neat, craftsmanlike installation—each one is a salesman for the next job. The Winckler installation team puts in Webster Baseboard Heating at less than the cost of hot water convectors.

While the supply of Webster Baseboard Heating is limited, shipments are being made regularly. Get availability information from the authorized Webster Factory Representative serving you. Call him or write us.

Address Dept. DE-6

WARREN WEBSTER & COMPANY

Camden 5, N.J. Representatives in Principal U.S. Cities

In Canada, Darling Brothers, Limited, Montreal

Webster BASEBOARD HEATING

Our Industry

June • 1951

AS THE EDITOR SEES IT!

Separation of Contracts . . .

CONTRACTORS IN OUR INDUSTRY have long maintained that separation of contracts—mechanical from general—is one sure way to cut the cost of construction. This contention, however, is not entirely shared outside the industry, despite the fact that the principle is one which should be easily recognized and understood.

In some cases, where public work is concerned, political expediency nullifies all effort on the part of the contractor to achieve separation. And in private work, the architect, engineer or authorized agent of the owner will sometimes overlook the opportunity of saving money for the one whom he represents.

Two outstanding examples of the savings that can be effected by separation of contracts were revealed last month to members of the Heating, Piping and Air Conditioning Contractors' National Assn., meeting in Washington, D. C. for their 62nd annual convention. The examples were contained in the report of Fred Williams, chairman of the association's Committee on Legislation.

In the first case, involving a low rent housing project in Norfolk, Va. (No. Va6-6), two types of bids were invited. One set was to be based on the entire job (including mechanical work) and the other on general and mechanical work separately. The results were as follows:

General Contract (low bid)		**$3,880,000**
Buildings only	**$2,597,000**	
Heat. & Plumbing	**744,846**	
Electrical	**152,040**	
Site improvement	**309,277**	**$3,803,163**
		$ 76,837

As can be seen, a saving of $76,837 was accomplished by separating the mechanical contracts from the general.

In another case, involving a memorial library at the University of Wisconsin, both types of bids were again invited. The results were as follows:

General Contract (low bid)		**$3,055,000**
Buildings only	**$2,283,700**	
Heat. & Vent.	**366,060**	
Plumbing	**124,944**	
Electrical	**167,800**	**$2,942,504**
		$ 112,496

As in the first case, a big saving was accomplished by separating the contracts.

These examples, cited by Mr. Williams and repeated manyfold throughout the country, are ample evidence that the government should give serious consideration now to the adoption of federal statutes which would make separation of contracts on publicly financed projects mandatory. This is true now, more than ever before, as mounting defense costs and spiraling taxes reach unprecedented heights. And private enterprise, in the interest of lower costs, should follow suit.

The contractor can assist in this job at the local level by gathering and using similar figures in a continuing effort to influence those who are charged with awarding contracts.

Special Message to Domestic Engineering Readers . . .

IN A SPECIAL message to DOMESTIC ENGINEERING readers, Charles P. Redick, deputy director of the Building Materials Division of the National Production authority, declared last month: ". . . we recognize that minimum disruption of normal peacetime production in the plumbing and heating industry is desirable in the present situation. This is more important now than during World War II. Maximum civilian production, consistent with meeting direct military and defense supporting needs, is our best assurance that inflationary pressures will be kept under control."

This statement by Mr. Redick bears out the contention that has often been advanced on this page, that a continuing and adequate production of normal plumbing and heating products is just as essential to the basic conduct of the nation's defense program as guns and shells.

The full text of Mr. Redick's message, and a summarization of the facts which bear out this contention, are given on the following pages.

Guns... or Plumbing and Heating?

DEPARTMENT OF COMMERCE
NATIONAL PRODUCTION AUTHORITY
WASHINGTON 25

May 10, 1951

Mr. O. T. Carson, President
Domestic Engineering Company
1801 Prairie Avenue
Chicago, 16, Illinois

Dear Mr. Carson:

It is indeed encouraging to receive your opinion based on Domestic Engineering's intimate knowledge of the plumbing and heating industry that that industry is ready and anxious to make maximum contribution to the nation's defense and continued economic welfare.

Your recent survey of manufacturers has been of value to the Building Materials Division in its program to achieve conservation of critical materials, together with adequate production of plumbing and heating items and war products.

We recognize, as you do, that minimum diaruption of normal peacetime production in the plumbing and heating industry is desirable in the present situation. This is more important now than during World War II when the general situation was not comparable to present conditions, although in our opinion the situation then was of no greater urgency. Maximum civilian production consistent with meeting direct military and defense supporting needs is our best assurance that dangerous inflationary pressures will be kept under control.

The co-operation of Domestic Engineering in disseminating information relative to current NPA policies and necessary regulations is greatly appreciated.

Sincerely yours,

Charles P. Redick
Deputy Director
Building Materials Division
Facilities & Construction Bureau

After officials of the National Production Authority had studied thoroughly the industry wide survey compiled by DOMESTIC ENGINEERING, Charles P. Redick, deputy director of the BMD, stated their conclusions in the letter to our readers reproduced above.

In Washington last week, officials of the National Production Authority studied results of a Domestic Engineering survey (above), which (1) proved that manufacturers in our industry can maintain production of plumbing and heating while, at the same time, making direct war items, and (2) gave NPA a factual basis for planning plumbing and heating production under the new Controlled Materials Plan. Shown above are Paul B. Holmes, chief of the Heating Branch, Building Materials Division; George Hoffman, consultant; Charles P. Redick, deputy director of the BMD; Hugh Woll, chief of the Plumbing Branch, and Ed Rowe, consultant.

We need maximum production of both, says the National Production Authority in this special message to Domestic Engineering readers, if we are to attain full strength in the present emergency

IT IS NOW OFFICIAL. The National Production Authority, after studying the results of a DOMESTIC ENGINEERING survey of the plumbing and heating industry (see photo above), has given official recognition to the fact that a continuing and adequate production of normal plumbing and heating products is just as essential in wartime as guns and shells.

In a special message to DOMESTIC ENGINEERING readers (see letter reproduced at left), Charles P. Redick, deputy director of the Building Materials Division of the NPA, made clear that "maximum civilian production consistent with meeting direct military and defense supporting needs" is recognized as an essential goal.

Not only would such a balance of civilian and military production be "our best assurance that dangerous inflationary pressures be kept under control," but adequate production of plumbing and heating materials would serve, as well, as a further assurance that military production itself will remain at a maximum level. For, as was demonstrated in World War II, the lack of vital plumbing and heating materials often delayed essential military construction (such as army camps, etc.).

The survey, which was completed several months ago, has been in use by the NPA as a factual basis for planning plumbing and heating production under the new Controlled Materials Plan. And the statements of Mr. Redick reflect, in essence, the conclusions of the survey.

For example, an analysis of the replies made by manufacturers to questions 5 and 6 of the survey indicates that: during World War II, the plumbing and heating industry converted too large a proportion of its facilities to direct war items, maintaining

(Please turn to top of next page)

Guns . . . or P-H?

(Continued from bottom of page 85)

too small a proportion for accustomed plumbing and heating products. It indicates further that defense needs required vast quantities of plumbing and heating, and that these products were essential for public health and safety and for the conservation of vital fuel and water, and it was discovered too late.

On the basis of these findings, the survey concluded that plumbing and heating should be maintained during the current industrial mobilization program, and that manufacturers of plumbing and heating should not be expected to convert as large a proportion of their facilities to unaccustomed war items as they did during World War II.

The letter from Mr. Redick indicates that the NPA has reached essentially the same conclusion, and that the answer to our headline, "Guns or Plumbing and Heating?" can be stated in one word. . . *both.*

How P-H contractors can use the MRO program to obtain vital supplies...

THE MAINTENANCE, repair and operating supplies program (NPA Regulation 4, DO-97) is likely to take on added importance in the months to come.

Therefore, although most items are in adequate supply at the present time, the domestic engineering dealer should have a thorough understanding of this important phase of the mobilization program.

In order to help its readers understand the various phases of the program, DOMESTIC ENGINEERING has selected several questions sent in by readers and publishes them here in "question and answer" form.

The MRO questions and answers follow:

New Business

Question: I have been in business since September, 1950. In figuring my MRO quota, I assume I pro-rate the figures for a one year period and take one-fourth to arrive at my quarterly limit for 1951.

However, I figure that my quota is less than $1,000 per quarter and, if I interpret your explanation of the MRO program correctly, I am therefore permitted to use the DO-97 rating for *all* of my orders for these materials.

Please advise if this is correct.

Florida O. F. Z.

Answer: Our reader is correct on both counts. For a business in operation only part of 1950, a prorated yearly figure is the basis for the quota.

Small businesses are permitted to initiate DO-97 ratings up to, but not exceeding, $1,000 per quarter without regard to the quota restrictions.

Records and Reports

Question: In the "At Press Time" section of April DOMESTIC ENGINEERING you mentioned that anyone using the DO-97 priority rating had to keep complete records for two years or so.

Could you explain this phase of the program more fully? I'm not at all sure what I'm supposed to be doing in this regard.

Ohio V. J. N.

Answer: Here's what the official NPA order says about the subject of records and reports:

"Each person who makes any use of the rating shall make and preserve, for so long as this or any successor regulation remains in effect and for 2 years thereafter, accurate and complete records showing what his quarterly MRO quotas are, how he computed them, the factual justification for them and for corrections or revisions; any elections made as to the use of seasonal quotas, methods of figuring quotas and charges against them, or other options exercised; all materials ordered or received for use as MRO or minor capital additions whether rated or not, and all other relevant data, in sufficient detail to permit an audit that determines for each transaction that the provisions of this regulation have been met."

While the foregoing may sound a bit formidable, it does not specify that you must use any particular accounting method and should not require alteration of the system you now use. Most domestic engineering dealers' present bookkeeping methods will suffice.

Minor Capital Expenditures

Question: Last month your magazine stated that the DO-97 rating could be used for "minor capital expenditures." Could you be more specific; how do you define the term?

Mississippi D. M. C.

Answer: Officially, NPA defines "minor capital expenditures" as "any improvement or addition carried as capital according to established accounting practice where the total cost of materials used does not exceed $750 for any one complete capital addition." Such purchases may carry the DO-97 rating. Example: New fitting bins in your shop or the purchase of a machine costing $750 or less.

But watch out for this one as it could get you in trouble. If your quota happens to be $1,100, for example, and you use the rating for a new machine costing $750, you've only got $350 left for MRO supplies. *Minor capital additions are not figured in your 1950 quota.* In other words, your 1950 base figures are *not* to include such items. This means that you could use up your quota too fast in 1951 and not have enough left for normal operation.

Generally speaking, it is wiser to try to handle your minor capital expenditures without applying the DO-97 rating.

Use of Rating Not Mandatory

Question: So far I've had pretty good luck getting all the MRO supplies I need. Therefore, I'm wondering if it is mandatory that I use the DO-97 rating on my orders from now on ?

Indiana R. L. B.

Answer: No, you do not *have* to use the rating. However, it is well to remember that if you do use it for any single order for even one item, then *all* your MRO purchase orders, regardless of whether or not you used the priority, automatically comes within your dollar quota for any given quarter.

Washington Report

A roundup of the late directives affecting the plumbing and heating industry

THE OUTLOOK for civilian production was reviewed last month in the light of the approaching effective date (July 1) of the Controlled Materials Plan.

According to the NPA, the aim is still to hold civilian production at about 70 percent levels of the base period (first six months of 1950) as far as steel is concerned. The cuts in aluminum and copper production may be greater.

There's some talk of applying a unit system of limitation on the amount of consumer durable goods to be manufactured. The plan, however, hasn't progressed beyond the talking point as yet. Such a plan would, of course, directly affect the plumbing and heating industry.

The "go slow" policy on out-and-out predictions of civilian production is dictated by the fact that government and industry alike generally concede that the Controlled Materials Plan will not be a very efficient operation during the third quarter of this year—that it will take some months to get it in full operation.

As the July 1 date neared, the basic provisions and requirements of the CMP began to unroll. The plan will be covered by seven general regulations, the first four having already been released as this issues goes to press. (See pages 82 and 83 in the May issue for background information on CMP.)

The scope and purpose of the first four regulations are outlined below:

CMP Regulation 1: The purpose of this regulation is to define rights and obligations under the CMP. It explains how production schedules are authorized for manufacturing operations and how materials are obtained to complete such production schedules.

CMP Regulation 2: This regulation forbids the accumulation of excessive inventories of controlled materials. It does this by limiting the quantities of such materials that can be ordered, received or delivered.

CMP Regulation 3: The purpose of this regulation is to define, under the CMP, the preference status of delivery orders for controlled materials and delivery orders for products and materials other than controlled materials.

CMP Regulation 4: This regulation describes how distributors make deliveries under the Controlled Materials Plan.

Next month DOMESTIC ENGINEERING will discuss Regulations 5, 6 and 7 of the Controlled Materials Plan. For additional information in this issue see the analysis of the prospects for plumbing and heating under CMP given below and "At Press Time" on page 73.

Washington Authority Analyzes the C M P Program and Its Likely Effect on Our Industry

By PETER B. B. ANDREWS

Industry Consultant, National Production Authority

SECOND REPORT: The government expectation of basic growth in the American economy in the next two years and the need for planning for it is the basis for the forthcoming Controlled Materials Plan and the expected equitable division of materials under the plan. The writer believes that it is conservative to expect the nation's gross national produce under the stimulus of armament production to expand at least 8 percent in 1951 over 1950, with another increase of about 7 percent in 1952 likely over 1951.

The plumbing and heating industry always moves along with the basic economy, and since the Government planners are looking for further expansion in economic activity during the next two years, it is also logical to expect that materials usage by the plumbing and heating industry will be on the rise.

If, however, sacrifices are ahead for this industry, the writer believes it will cooperate fully —as it always has in the past—and that it will show typical American ingenuity by operating at a high, efficient rate of war and civilian goods output in the face of adversities.

Any production slowdown due to lack of sup-

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Let's Analyze the Benefits of . . .

Dealers from all over the country give their opinion on this important question

DURING the past five years our industry seems to have shown a definite trend toward price advertising at a dealer level. This comes, no doubt, as a natural consequence of the heavy post-war emphasis on merchandising. And thus it is not at all surprising that, in a recent survey conducted by DOMESTIC ENGINEERING, most contractor-dealers cast their votes in favor of price advertising and price tagging of merchandise on showroom floors.

However, there were enough dissenting votes cast and enough variation among affirmative opinions to warrant a discussion of this 64-dollar question. For, while most domestic engineering dealers are in favor of price advertising, many of them suggested that price advertising was practical for only certain types of merchandise, or that only the *installed* price should be used.

As R. P. Sornsin of Fargo, North Dakota points out, "a portion of the public is definitely

THIS PRICE ADVERTISING INCREASED SALES 50 PERCENT

Heatmasters of Chicago are sold on price advertising . . . and here's why: They tried the window display without a price (above, left), and found that they were not getting the response that they desired. They came up with another sign with an installed price (above, right) and, according to Mr. Jocobson, their sales increased 50 percent. (Also, note offer of guarantee.)

Here's what one reader says about PRICE ADVERTISING:

For most types of merchandise I believe that price advertising in newspapers and price tagging in stores is definitely a must for the domestic engineering dealer. Most people, *I think*, want to see a price tag on an item, so that they can tell whether or not it suits their pocketbook; also, it establishes confidence between the buyer and the seller.

If the price includes the installation cost, that makes it better still; for the prospective customer knows that such a charge will be made, and if the ad doesn't make it clear that this is included in the price, he becomes worried.

I think price advertising makes selling easier, too, once the customer gets into the store. If he has seen your ad, he knows your price, and the fact that he is there seems to indicate that he can afford it.

Like most plumbing and heating contractors, Jimmy Lutz uses price advertising, but he cautions that there is also another side to the problem.

◀ PRO

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On the other hand, an ad that carries a price can often scare away the customers. This is especially true when the dealer is fighting cut-rate competition. The customer reading the ad feels that he is foolish to pay a price higher than that of the cut-rate stores, and he just doesn't come in to investigate the matter.

If a prospective customer such as this saw an attractive ad without a price, or a good display of the item he wanted in the window without a price tag, he might come into the dealer's store. And once in the store, it might be possible to sell him, even with the higher price, because of the additional services, guarantees, etc., that the domestic engineering dealer can offer. Thus, in such a case, the ad with the price doesn't pull the best.

skeptical of plumbing prices," and he feels that this can be overcome if the dealer's advertising 'includes both the installation charge and the price of the item." He continues, "We use this type of advertising on water heaters, heating plants, etc., and we find that it definitely improves customer relations."

Several more readers were of the same opinion. Others, such as E. Sugarman of San Francisco, stressed the importance of including an offer of a year's free service and an unconditional guarantee with a price quotation in an ad or price-tagged window display. "Let the customer know that he is buying more than he bargained for . . . tell him about the extra experience, service and reliability included in the price."

Most readers felt that the best reason for price advertising was that the public wants it. Typical of many comments on this point was that of W. F. Hildeman of Chicago Heights, "A price tag on the article to be sold definitely meets with the customer's approval, creates confidence and

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OTHER READERS HAVE THIS TO SAY:

always a difference of opinion, but I feel that merchandise without a price tag should be in the packing crates. . .not in the dealer's display window. All buyers want to know, "How much does it cost?"

If the customer has this ans-

looking over our recent ads, I find that I can state without exaggeration that the ads from which we got the most action were those which carried a price. Of course, there will be exceptions to this rule. I can think of several instances

with our experience, and we believe that others have had about the same difficulties. Thus, we feel that when you're fighting cut-rate competition, your ads should not show the price. No matter how much noise you make about your services, the larger

and regarding your recent letter, we wish to make the following statement:

Our advertising always includes the price of the item and the installation charge, if any.

We use this method on water heaters, fixture replacements,

Omaha's Wray Scott, left, is shown as he turned the president's gavel over to Harold McGregor of Cambridge, Mass., new president of the Heating, Piping and Air Conditioning Contractors' National Assn. The new vice president, second from right, is William Murray, New York City, and the new treasurer, R. W. Lawinger, Chicago.

What's Ahead

FOR HEATING CONTRACTORS?

Some of the big question marks are removed by speakers at the annual meeting of the Heating, Piping and Air Conditioning Contractors Assn.

THERE WAS NO CRYSTAL BALL at the 62nd annual meeting of heating, piping and air conditioning contractors last month in Washington, D. C. But the experts, nevertheless, were able to arrive at many sound answers to the questions facing our industry today, by basing their opinions on current trends and historic parallels.

Foremost, in significance, was the statement by Paul B. Holmes, chief of the Heating Branch of the National Production Authority, who declared ". . . while mobilizing for defense, it is necessary, at the same time, to keep our civilian economy safe and strong." This can be accomplished, Mr. Holmes said, by a strong partnership between industry and those charged with expediting material for the military.

Interpreting NPA's basic policy, Mr. Holmes indicated that such a partnership will continue to achieve high output of *both* war products *and* plumbing and heating . . . with each in proper balance with the other. In support of this objective, he cited the experience of World War II, which showed that a continuing and adequate production of plumbing and heating is just as essential in wartime as guns and shells. Members of this industry, Mr. Holmes said, will remember the delays in war production during World War II caused by the lack of plumbing and heating components which

(Please turn to top of page 170)

Here's what the

. . . The defense program, which is demanding an ever increasing volume of new plant construction, will call for the utmost contributions of facilities and experience from heating, piping and air conditioning contractors. We feel, therefore, that the NPA should not place any more building materials on the restricted list unless absolutely needed . . . *Wray Scott, president of Heating, Piping and Air Conditioning Contractors' National Assn.*

. . . While mobilizing for defense, it is necessary, at the same time, to keep our civilian economy safe and strong. This can be accomplished by a strong partnership between industry and those charged with expediting material for the military. Such a partnership, which is integral with the NPA's basic policy, will continue to achieve high output of both war products and plumbing and heating . . . *Paul B. Holmes, chief of the Heating Branch of the National Production Authority*

speakers said at the heating contractors' convention...

. . . There are some historic parallels today. For example, our experience during World War II demonstrated the importance of taking care of old customers as intelligently and efficiently as possible. As a result, many of them remained good customers when restrictions were removed and building was resumed by civilian enterprise . . . *Harold McGregor, newly elected president of Heating, Piping and Air Conditioning Contractors' Assn.*

. . . Heating, piping and air conditioning contractors have a three-fold responsibility to their nation and to themselves. They must keep the present structure of the civilian economy operating during this period. They must assist in the military build-up. And they must maintain civilian contacts so they will be in position to work on civilian projects when current credit restrictions are relaxed . . . *Joseph C. Fitts, association secretary*

. . . Some of the old-timers in our industry have expressed disparagement because of their earlier experiences in the installation of small air conditioning systems. However, it is well to point out that the equipment as now manufactured is eminently superior to what it was ten years ago, and the service work on the modern self-contained unit is markedly reduced . . . *W. S. Bodinus, chairman of the Air Conditioning Committee*

. . . If we maintain our great industrial potential, devoted to both war products and plumbing, heating and air conditioning then we have nothing to fear from the enemies of freedom. Contractors, manufacturers and wholesalers in the heating, piping and air conditioning industry play a vital role in this potential, both from the standpoint of production and actual installation . . . *Bruce Barron, chairman of the Board of Batten, Barton, Durstine and Osborn*

. . . A large number of installation contracts are now being let by the Navy for national defense purposes. Contractors who are interested in this type of work should contact the District Public Works Offices in the various Naval Districts. The defense of the nation will demand the utmost from everyone, and it is well recognized that heating, piping and air conditioning contractors have a leading role . . . *Rear Admiral Joseph F. Jelley, Chief of Yards and Docks*

. . . Amid the confusion which accompanies wholesale conversion to defense production, it is practically impossible to obtain Federal legislation requiring separation of contracts. However, this association will continue to expend every effort in that direction. In localities which are fortunate enough to have separate bidding statutes, contractors should maintain extreme vigilance to keep them . . . *Fred P. Williams, chairman of Committee on Legislation*

The BALANCE SHEET

It provides the best means for measuring the growth or decline of a business and is the end-result of all record-breaking systems, whether they are simple or complex

IF ALL ACTIVITY in a store could be stopped for an instant . . . and a snapshot taken of the financial status of the business, the picture would reveal several things: That there was so much cash on hand and in the bank, the stock was worth so much, the store's customers owed so much, and so on.

In other words, the picture would show everything a proprietor wanted and needed to know about his business.

Unfortunately, it's impossible to obtain a picture, in the literal sense of the word, of the financial condition of a business. But it *is* possible, *by means of adequate record-keeping*, to come pretty close to the real thing.

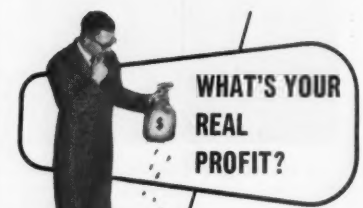
In accounting terms, the *balance* sheet is the "picture" of how a business stands on any given date. (See illustration on facing page.)

The balance sheet forms the basis for the measure of the growth or decline of a business from one period to another; it is, in fact, the end-result of all record-keeping systems, no matter how simple or complex.

Why Discuss Balance Sheet?

Readers may ask, "Why discuss the balance sheet *first* if it's the end-result of all record-keeping systems?" The question can best be answered by the following example:

If someone were to make a careful study of a piece of machinery, he would probably begin with the finished article.



Part Two of a New Series on Management Methods

He would look at it completely assembled, ready to operate. Soon he would learn what the important parts were, and the relationship of the parts to each other and to the whole. Then he would probably take it apart and examine each part in detail and put it together again. Eventually he would know all about the machine and how it worked.

The same principle will be applied to this series of articles on management methods. By starting with the finished product or end-results of record-keeping systems, we quickly learn its important parts and their function. In forthcoming issues, DOMESTIC ENGINEERING will "take apart" a representative system and examine its lesser, but vital parts, in detail so that contractor-dealers will have a thorough, workable knowledge of a record-keeping system which will provide an answer to the question, "What's Your Real Profit."

In discussing a subject so broad in scope, certain portions may appear to some readers to be quite fundamental, but these will form the basis for a review of the principles involved. For other readers, those contractors who are new to retailing for example, a thorough understanding of these fundamentals, like the balance sheet, will be essential to the successful operation of their business.

There are two sides to every question and the question "What is the financial status of a business?" is no exception. On one side of the question, as well as the balance sheet, is the cash on hand and in the bank, the amount owed by customers, the furniture and store fixtures, the inventory of goods, delivery equipment, etc. These are "assets" or the things the proprietor owns, either entirely or in part.

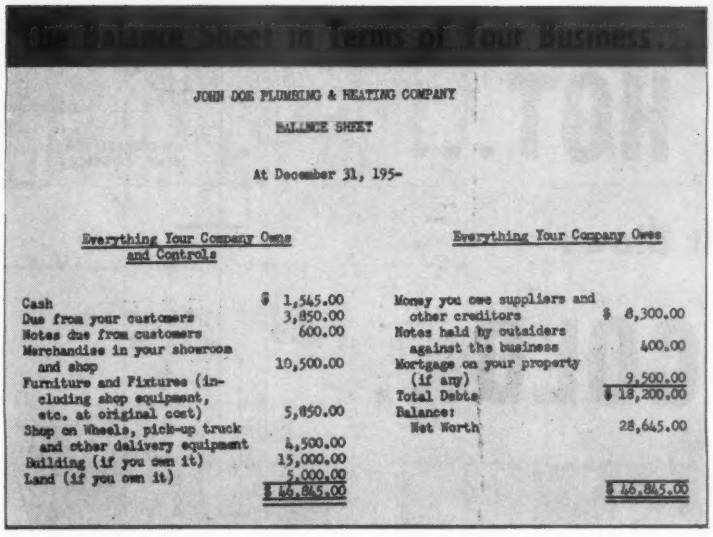
The Other Side of the Question

On the other side are the amounts owed to suppliers, to the bank or to other creditors, notes or mortgages payable, etc. These are "liabilities", or the amount the business owes to others. The difference between the total assets and the total liabilities represents the "net worth", or the value of the proprietorship in the business, as of a given date. In other words, a balance sheet classifies and lists all assets and liabilities. It is a summary of every transaction that has taken place on the books of the business.

This summary results in the "proprietorship equation": assets minus liabilities equals net

worth. It's a simple enough equation but difficult to arrive at with any degree of accuracy unless it is based on adequate records. The "net worth" figure is the essence of the balance sheet; it answers the question of how much a business is worth.

It might be well to point out that "net worth" as shown on the balance sheet is not to be confused with the present value of a store as a going business. The "going value" of a business is usually different from the total present values of the assets. The balance sheet, plus rate of earnings and future prospects of the business all figure in the "going value."



JOHN DOE PLUMBING & HEATING COMPANY

BALANCE SHEET

At December 31, 195-

Everything Your Company Owns and Controls		Everything Your Company Owes	
Cash	$ 1,545.00	Money you owe suppliers and other creditors	$ 8,300.00
Due from your customers	3,850.00	Notes held by outsiders against the business	400.00
Notes due from customers	600.00	Mortgage on your property (if any)	9,500.00
Merchandise in your showroom and shop	10,500.00	Total Debts	$ 18,200.00
Furniture and Fixtures (including shop equipment, etc. at original cost)	5,850.00	Balance: Net Worth	28,645.00
Shop on Wheels, pick-up truck and other delivery equipment	4,500.00		
Building (if you own it)	15,000.00		
Land (if you own it)	5,000.00		
	$ 46,845.00		$ 46,845.00

JOHN DOE PLUMBING & HEATING COMPANY

BALANCE SHEET

At December 31, 195-

ASSETS		LIABILITIES AND CAPITAL	
Cash	$ 1,545.00	Accounts Payable	$ 8,300.00
Accounts Receivable	3,850.00	Notes Payable	400.00
Notes Receivable	600.00	Mortgage Payable	9,500.00
Merchandise in Inventory	10,500.00		$18,200.00
Furniture & Fixtures	5,850.00		
Delivery Equipment	4,500.00		
Building	15,000.00	Balance:	
Land	5,000.00	Net Worth	$28,645.00
	$46,845.00		$46,845.00

Shown at the top is a simple, unclassified balance sheet with items listed in everyday terms. Shown below is the same balance sheet using accounting terms. Note that everything the business owns is listed on the left side and everything the business owes is listed on the right. These examples are merely to indicate the fundamental principles.

Figures Come from Records

The typical balance sheet shown at the right is a simplified version, but adequate to acquaint readers with the general information given by this financial statement. This article will not attempt to explain or trace the source of the figures on a balance sheet. All figures are, of course, taken from the supporting records kept from day to day. In future articles, the basis for the figures will become apparent. For our purpose here, it is sufficient to say that each and every transaction, no matter how small, if properly recorded, is reflected in the balance sheet.

It is important to realize that the balance sheet is no better than the tools used in its preparation. Faulty and inadequate record keeping will result in a faulty balance sheet. Many a retailer is aware of the importance of financial statements and uses them—but if they are not backed up by a solid record-keeping system their value to the business is questionable.

The most obvious use of the balance sheet is to determine the net worth of a business. It also lists and classifies assets and liabilities for ready reference. Bankers and suppliers are aided in making loans and allowing credit. The balance sheet is the basis of investigation by auditors, the federal government, and others.

In addition to its obvious uses, the balance sheet can be analyzed to show whether the amounts of the various liabilities, assets and the net worth are of sound proportions, when related to each other.

For example, the ability of a retailer to pay his current bills as they come due is often measured by comparing the total amount of his bills with the total amount of his cash and other current assets. The comparsion is made by dividing current assets by current liabilities. A current ratio of 2 to 1 is generally considered to be satisfactory.

The subject of balance sheet ratios and how to figure them is reserved for another article. The ratios can help a proprietor better visualize the financial condition of his store.

Some of the points mentioned here may not be too clear to the reader at this time. However, a continuing study of these articles will show how the various elements discussed fit into the overall picture.

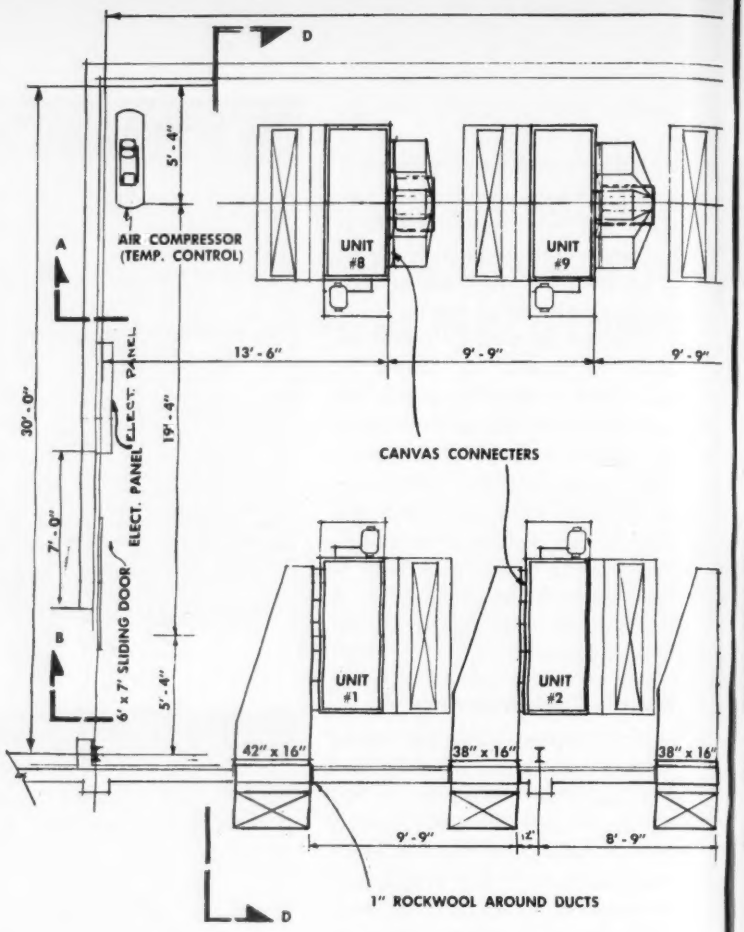
It Blows

HOT...

It Blows

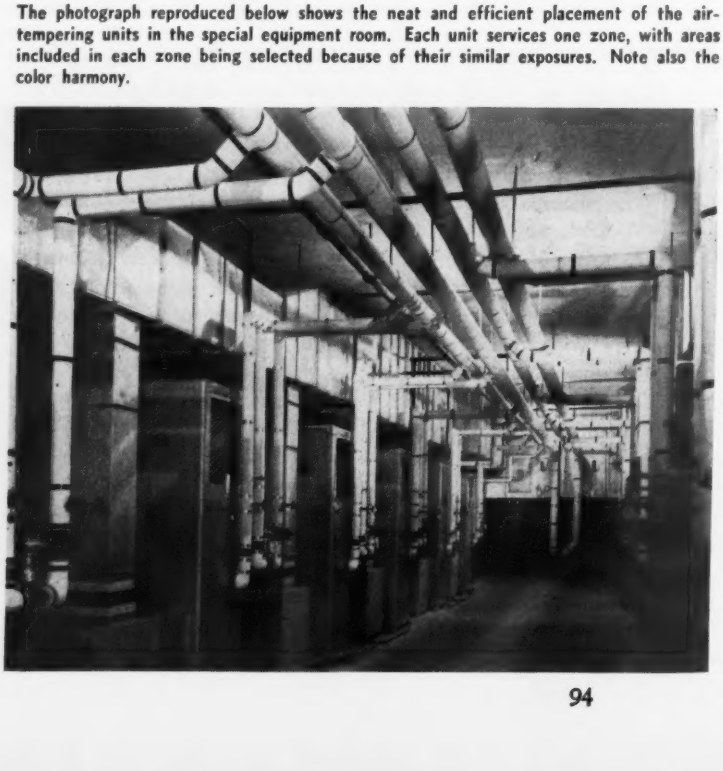
COLD...

Zoned to permit greater efficiency of operation, this interesting air-tempering system is designed for year-round service



Reproduced above is a layout of the special equipment room (located on the top of the office building) of the new Los Angeles plant of the Union Hardware and Metal Company. Albert C. Martin and Associates were the architects; Mehring and Hanson, Inc., heating contractors.

The photograph reproduced below shows the neat and efficient placement of the air-tempering units in the special equipment room. Each unit services one zone, with areas included in each zone being selected because of their similar exposures. Note also the color harmony.

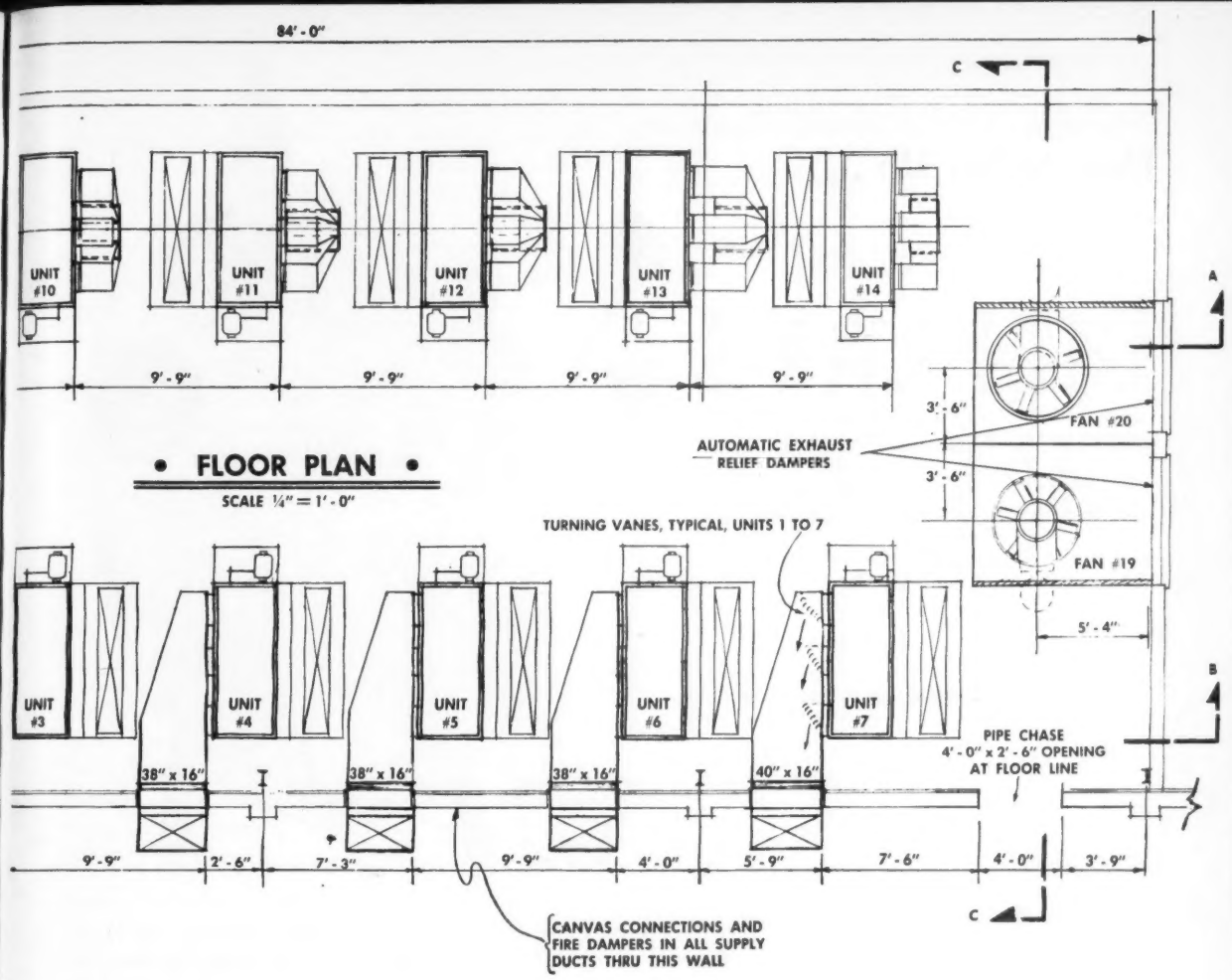


FLEXIBILITY is the word that best characterizes the air-tempering system recently installed in the new Los Angeles plant of the Union Hardware and Metal Company. Designed by Albert C. Martin and Associates, architects, and installed by Mehring and Hanson, Inc., the system is capable of both winter heating and summer cooling.

System Composed of 18 Units

Composed of 18 air conditioning units, the system provides in excess of 120,000 cfm of tempered air for the comfort of office and warehouse workers. For heating, hot water coils are used, and in warm weather, air cooling is effected by the utilization of cold water coils in blanked-off spaces provided for this purpose.

The plant itself is said to be one of the most modern structures in the greater Los Angeles industrial district. Situated on a



27½ acre tract of land, it covers 466,650 sq ft, with offices alone occupying over 59,000 sq ft.

System Divided into Zones

In order to properly serve this vast and diverse area, the air-tempering system is divided into several zones. Each of 13 units handles one zone, the tempering load of each zone being so balanced that an equal capacity is required of each unit. One smaller unit is required for a smaller zone. The areas selected for each zone are those of a similar exposure.

Selection of the areas for each zone was effected with special attention being given to the type of exposure in each case.

For example, all western rooms are included in one zone, all southern rooms in another and groups of inside offices are in a third.

The 14 air conditioning units discussed above are installed in a special equipment room located on the top of the office building.

As may be seen in the floor plan, they are arranged in two rows of seven units each. One row handles the entire lower floor of the merchandise building, while the other handles the second floor.

Each of the larger units delivers between 6,000 and 8,000 cfm, while the smaller one delivers 3,500 cfm.

To facilitate the compact arrangement illustrated, the specifications called for the installation of two large axial flow fans for the purpose of withdrawing the stale air.

This is done by means of a ceiling return, or plenum air chamber. Special noise-reducers assure quiet fan operation.

Presenting a completely different problem than did the rest of the plant, the cafeteria, therefore, was supplied with three units of its own. Two 6,000 cfm units and one 4,500 unit were installed. To handle kitchen requirements only, the latter was installed overhead.

Care was given, too, to the decoration of the room housing the air-conditioning units. Not only is the room pleasing from a layout point of view, being neat and yielding easy access to each item of equipment, but its colors are also pleasing to the eye.

Color Harmony Is Considered

The room is finished in colors which harmonize with the grey of the air-conditioning units; even the exterior piping is color coated to harmonize.

The flexibility of this air-tempering system seems representative of what appears to be a growing trend toward systems designed for all-year comfort.

How to Set Up . . .

DISPLAYS THAT SELL

★ Second Article of a Series ★

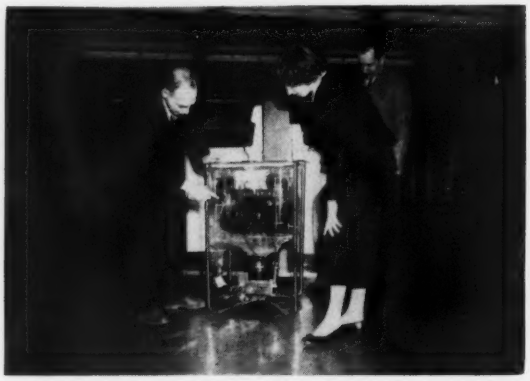
For details on making this display created by E. Sugarman, Inc. of San Francisco, see box on facing page.

THERE'S AN OLD SAYING that goes, "No man can do two things well at the same time"—the same thing is true for a display. That's the philosophy and reasoning behind the basic principle of display—*all emphasis is no emphasis.*

In setting up a window or interior display, it is wise to select one unit as the subject of emphasis. Let that one unit stand out among the rest of the items in the display. One of the more effective ways this can be accomplished is through the use of "light and motion."

As mentioned last month, George Groote of Chicago sets up one product (such as an automatic washer) on a revolving pedestal, and then highlights it through the use of spotlights. Ordinarily, the motion of the moving washer is enough to make that one product catch the eye of the passerby. Mr. Groote undoubtedly added the spotlight to heighten the dramatic effect.

But, before going into the details of light and motion to gain emphasis, let's see what emphasis means. Two theoretical windows, one bare save a single water heater and the other containing ten different brand water heaters, can serve as an example. The window with the one unit has emphasis because that single unit is the only thing



Emphasis: This operating display gains emphasis because it stands alone, and there are no disturbing distractions. Here, W. E. Gilbert of Westchester, Pa., is demonstrating the unit.

Emphasis: Always a good eye-catcher is this turntable display used by A. R. Thompson of Norfolk, Va. Though the customer sees several models, repetition puts the emphasis on water closets.

the prospective customer can see—thus, it attracts his complete attention. The other window has so many objects that the prospective customer cannot focus his eye on any one unit. This, of course, is an exaggerated example, but from this it is easy to see why emphasis should be an integral part of every display.

Now, back to "light and motion." Correct lighting, as discussed last month, means that the display can be easily seen. A well-lit showroom attracts as much attention as the displays. But, once the customer is inside the showroom, it is necessary that each display in turn attract the customer's eye.

Naturally, every display in a showroom will not, can not, be expected to be a point of emphasis. However, each display can be an integral part of the whole showroom picture and help build up to a point of emphasis.

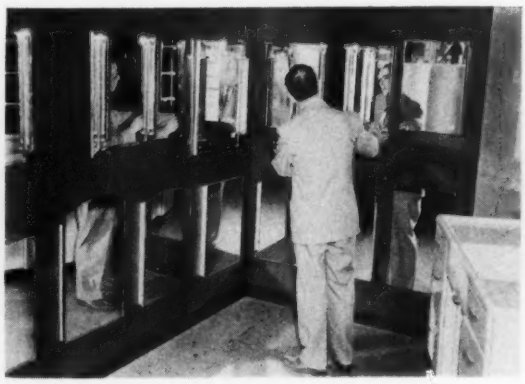
Some of the principles for lighting in displays can be found in the point-of-sale displays furnished by manufacturers. Tiny lights that illuminate a background, a flashing light that spotlights a product and a wheel that makes the lights change colors are just three of the devices that can be used effectively. Each device emphasizes *the product.*

Motion Attracts Attention

The use of motion, in itself, is also enough to attract the customer's eye. Ralph Guinner of St. Louis, for example, has had a revolving disk set flush with his showroom floor. His most important displays are then set upon this disk—the customer can see every facet of the display without moving an inch. And, the mere motion of the display is enough attraction to act as a customer "stopper."

Another twist to this motion-for-emphasis idea was used by the Chapman-Valle Company of Salt

(Please turn to top of page 211)



Emphasis: Everyone looks at a mirror, and E. Sugarman, Inc. of San Francisco emphasizes its wares by putting up a mass display of bathroom mirrors. Above, Mr. Sugarman inspects his handiwork.

Check Your Own Displays With "Displays That Sell"

Visibility: All parts of the display that *should* be seen *can* be seen without difficulty from any angle. ☐

Lighting: Adequate lighting allows a prospective customer to easily see even the most intricate details of a product. The lighting aids the attractiveness of the display. ☐

Emphasis: Only one element is completely dominant in each display. There are no distractions to take away from the attraction. ☐

Timeliness: All displays are appropriate for the selling season. Effective use has been made of local events to add interest to displays. ☐

Impact: Each display shows a prospective customer why he is looking at a "good buy." Techniques such as motion, eye travel or lighting have been used to create the greatest possible buying desire. ☐

Pattern: Every display is part of the complete selling pattern. One display leads to another, and there is a logical follow-up once the prospective customer shows interest. ☐

MAKE A PALLETTE SHAPED DISPLAY FOR YOURSELF

A piece of ply-wood, six water closet seats, paint or lacquer and two wet-mops plus a little of that ever necessary elbow grease—add them together and you have a pallette shaped "Display That Sells." This display (see facing page) was originally created by E. Sugarman, Inc. of San Francisco.

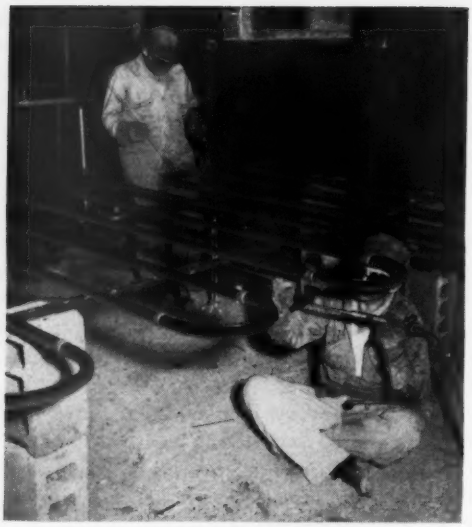
To make this display, follow this procedure:

1. Trace the outline of a pallette on a piece of ply-wood about eight feet square and cut out.
2. Drill holes for attaching closet seats. The seats are attached by the two bolts normally used for attachment to the water closet.
3. Finish the wood with either clear lacquer or paint of a neutral tone.
4. Letter in an appropriate statement for the center of the pallette using several different colors.
5. Attach the closet seats. Each one should be of a different color.
6. Add the two wet-mops and place on an easel, as is done by E. Sugarman, Inc., or mount on a wall.

REFRESHER COURSE ON

Pipe Welding and Cutting...

Second Article of a New Series • Setting up the Equipment



THIS instructional series of articles on pipe welding, cutting and brazing will serve both to bring the old-timer up-to-date on the latest wrinkles and techniques, and to present a refresher course in fundamentals to the recent arrivals in our industry.

Last month we discussed the selection of the needed equipment, to be based on an analysis of the business, and the types and amount of welding and/or brazing to be done. It was decided that most likely both oxy-acetylene and air-acetylene equipment would be needed for handling both ferrous and non-ferrous metals. In addition, the construction and location of a shop welding site was presented along with safety measures.

This month's article takes up the setup and the operation of welding equipment, and gives safety tips on handling and storage. Future articles will deal directly with pipe welding and brazing, both with oxy-acetylene and electrical welding equipment.

First, before going into equipment set-up, a word of caution is in order. These articles are not designed to make a welder out of a mechanic who has never held a torch in his hand. It would be hazardous for a beginner to attempt to learn welding from the printed page, although he could probably keep from blowing himself up if he paid strict attention to the data in these articles. Welding is an art, and should be learned, even for pipe welding, from an accredited instructor. Brazing, with an air-acetylene torch, is a little simpler, and possibly could be picked up by study and practice, but here again the safety factor suggests that the benefits of personal instruction be obtained. This article, as mentioned, is more of a review than an instruction manual for the novice.

This second in series article was prepared from material and illustrations supplied by The Linde Air Products Company of New York.

Starting with the acetylene and oxygen tanks, let's review briefly the correct sequence of equipment setup:

Step one: Secure the two cylinders (oxygen and acetylene) to-

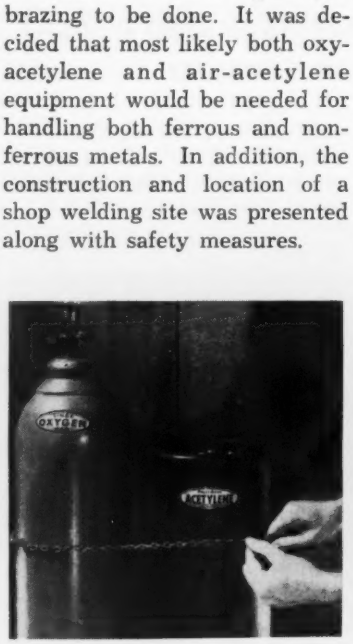


Fig. 1: When setting up the welding equipment, first secure the two cylinders so they can't tip or fall over. Chain to a work-bench.

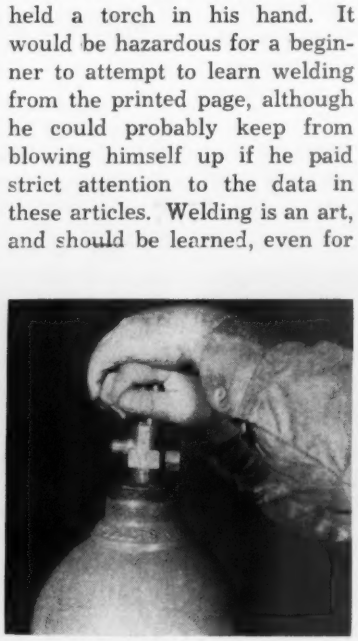


Fig. 2. Get rid of dust around the valve seat by opening valve slightly, blowing off the dust. When it hisses, close the valve.

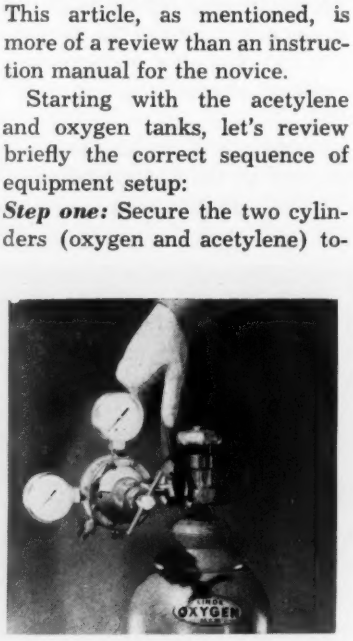


Fig. 3: Then connect the oxygen regulator to the oxygen tank and tighten the connection nut with a wrench. Keep oil out.

gether so they can't fall over. See Fig. 1, on facing page.

Step two: Take off the oxygen cylinder cap, stand it to one side of the valve outlet and open the valve slightly, as indicated in Fig. 2. When it hisses, close the valve. This gets rid of any dust around the valve seat.

Step three: Connect the oxygen regulator to the oxygen cylinder and tighten the connection nut with an open-end wrench. Never use oil and grease near oxygen equipment—these can ignite violently in the presence of free oxygen. See Fig. 3.

Step four: Loosen the regulator handwheel. Stand away from the front of the regulator and open the cylinder valve—slowly at first—then all the way. The lower gage will then show pressure. Fig. 4 shows how.

Step five: Blow dust out of the acetylene cylinder valve by opening the valve ¼ turn, then closing it quickly. Don't do this near sparks or flame. See Fig. 5.

Step six: Attach the acetylene regulator to the acetylene cylinder, remembering that acetylene connections have left-hand threads. Loosen regulator handwheel and open the cylinder valve slightly, as in Fig. 6. Then turn the valve 1½ turns. Leave tank valve "T" wrench in place.

Step seven: Blow loose talc powder out of new hoses by attaching one end to the oxygen regulator outlet. Blow oxygen through hose, increasing the pressure to 5 lbs. Then turn it off. Do the same with the acetylene hose, but also blow it out with your mouth afterward to remove oxygen from the hose. This procedure is shown in Fig. 7.

Step eight: Connect green oxygen hose to the oxygen regulator outlet, and to the blowpipe oxygen inlet (right-hand threads). Connect the red acetylene hose to the acetylene regulator outlet and blowpipe acetylene inlet (left hand threads). Tighten both with an open-end wrench.

Step nine: Test for leaks with equipment completely assembled. Leaks waste oxygen and acetylene and are a fire hazard. Most leaks are caused by loose connections and can be stopped by tightening the connection. If you find a leak that can't be stopped, shut off the oxygen and acetylene supply at the cylinder, and release the remaining oxygen or acetylene from the part of the equipment to be fixed.

The items needed for leak-testing are a clean paint-brush, a cloth, pail of water and a cake of grease-free soap to make soapsuds. Before testing the blowpipe oxygen valve stem, welding head connection and tip connection, close the acetylene valve regulator handwheel until it spins freely. Open the blowpipe acetylene valve and disconnect the acetylene hose from it. Then

(Please turn to top of page 168)

Fig. 6: When attaching acetylene regulator to the tank, remember that threads are left-hand. Open tank valve 1½ turns.

Fig. 7: Blow talc out of new hoses by attaching one end to oxygen regulator, blowing at 5 lb. Do same to acetylene hoses.

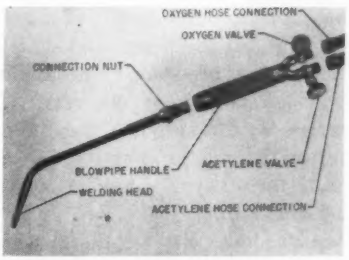


Fig. 8: Green oxygen hose goes to oxygen regulator outlet and blowpipe oxygen inlet. Red hose goes to same on acetylene.

Fig. 4: Loosen the regulator handwheel. Stand away from in front of the regulator and open the cylinder valve slowly at first.

Fig. 5: To blow dust out of the acetylene cylinder valve, open the valve ¼ turn, then close quickly. Do not do this near sparks.

Fig. 10: Hold the blowpipe tip in water, with blowpipe valves closed and pressure on. If bubbles, the valve seat is leaking.

How to Level Out

PEAKS AND VALLEYS

in a Heating Business

Here is the story of how a well-integrated preventive maintenance program helped to solve the problem for one contractor

(Continued from last month)

SUMMER, according to a recent survey of 100 heating contractors, is often either a feast or a famine, a time of frantic activity or a slack season, depending of course upon the type of operation involved in each case.

But for Automatic Oil Heating of Chicago, summer, in so far as business volume is concerned, is much like any other season . . . a busy, but not-too-busy period. This firm has managed to level out the peaks and valleys by a combination of two programs: one involves a year-round service and repair contract; (see last month's article on this subject) and the other, the topic of this article, is an effective and well-planned program for one-call summer servicing of residential heating units.

As soon as the weather warms sufficiently, L. W. Davidson, Automatic Oil Heating's service manager, starts the ball rolling by composing a "Summer Clean-up Bulletin." This letter stresses the need for summer servicing of heating equipment, and outlines the operations of the service offered by his firm (see facing page for details).

Shown above are L. W. Davidson of Automatic Oil Heating Company, Chicago, and a prospective heating customer. The firm's display features an operating twin boiler hookup and an oil burner.

"Any piece of machinery," says Mr. Davidson, "that is in almost constant use for nine months of the year is deserving of considerate treatment, and the oil burner is no exception to this rule."

The letter goes on to state that a Summer Clean-up will assure the customer trouble-free, effecient service from his heating plant for the coming year, and lists the price, $12.50. Enclosed is a self-addressed, stamped card on which the customer is asked to write his name and address for return mailing.

Last summer Mr. Davidson sent out 8,500 such letters, and as a result, 3,400 clean-ups were made. The secret of this high rate of return, according to Mr. Davidson, is that the letters were all sent to old customers for which an installation had been made. Also, Automatic Oil Heating carries but one line of heating equipment, and in advertising it is stressed that the firm is the official servicing agent for this line.

An attempt is made to get the letters out and the replies in early so that a careful scheduling of the summer's clean-up calls can be made. By detailed planning a uniform flow of work is assured for the service department and no last minute rush develops. Temporary and slight slack periods are filled by scheduling the service-contract customers who also have the Summer Clean-up as a part of their contract. In the planning, these are held back until it is evident that

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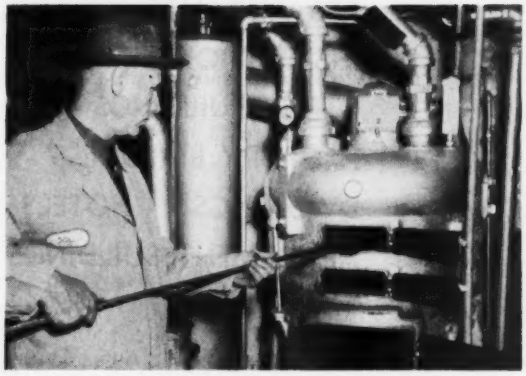


1 Shown above is a serviceman from Automatic Oil Heating brushing out the boiler as a first step of a Summer Clean-up.

2 Next the serviceman uses a vacuum cleaner to take up all the loosened dirt. Note that he is wearing a clean uniform.

Field Operation

Automatic Oil Heating Company's preventive maintenance program includes the following operations:

1 BOILER IS BRUSHED DOWN

The fire-box and flue passages of the boiler or furnace are brushed down with a wire brush.

2 DIRT IS REMOVED BY VACUUM CLEANER

All dirt loosened from the inside of the heating plant in the previous operation is removed with a vacuum cleaner.

3 ROTOR IS CLEANED AND ADJUSTED

Rotor and other parts of the burner are thoroughly cleaned, lubricated if essential, and adjusted for greatest efficiency.

4 CONTROLS ARE INSPECTED

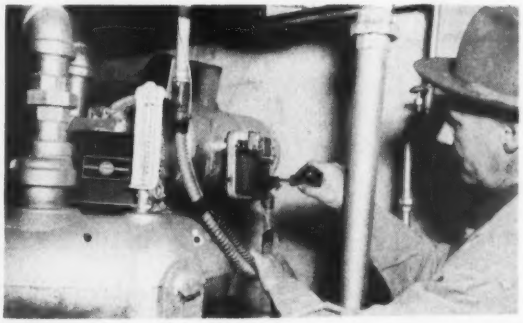
Oil burner controls are inspected and cleaned. Each individual control is tested for safe, reliable operation.

5 OIL FILTER IS CLEANED

Fuel tank is checked and the oil filter is cleaned. Piping system is thoroughly inspected for possible leaks.

The above operations are available to Automatic Oil Heating Company's customers for $12.50. The firm expects to do several thousand Summer Clean-ups this year, beating last year's record.

3 Taking apart the burner, he now cleans the rotor. Newspapers on the floor assures the homeowner of a clean basement.



4 All controls are thoroughly tested for efficiency and safety. At this time, exterior of heating plant is carefully cleaned.

5 The fuel and piping system is examined, and the oil strainer cleaned. When completed, the job insures trouble free service.

Water Supply Pipe Sizing...

RESTAURANTS
INSTITUTIONS
OFFICE BUILDINGS
FACTORY BUILDINGS
DWELLINGS - - HOTELS
APARTMENT BUILDINGS

• **Part Two of a Two-Part Series** •

THIS second in series article on pipe sizing for water distribution systems in all types of buildings, takes up pipe classification, pressure drop and sizing of mains, branches and risers.

The first five steps in sizing of water distribution pipe were presented last month, and included checking water pressure available, effect of water on pipe material, estimating the demand load, pipe capacity and sizing the cold water supply pipe. The next step in sequence takes up pipe classification.

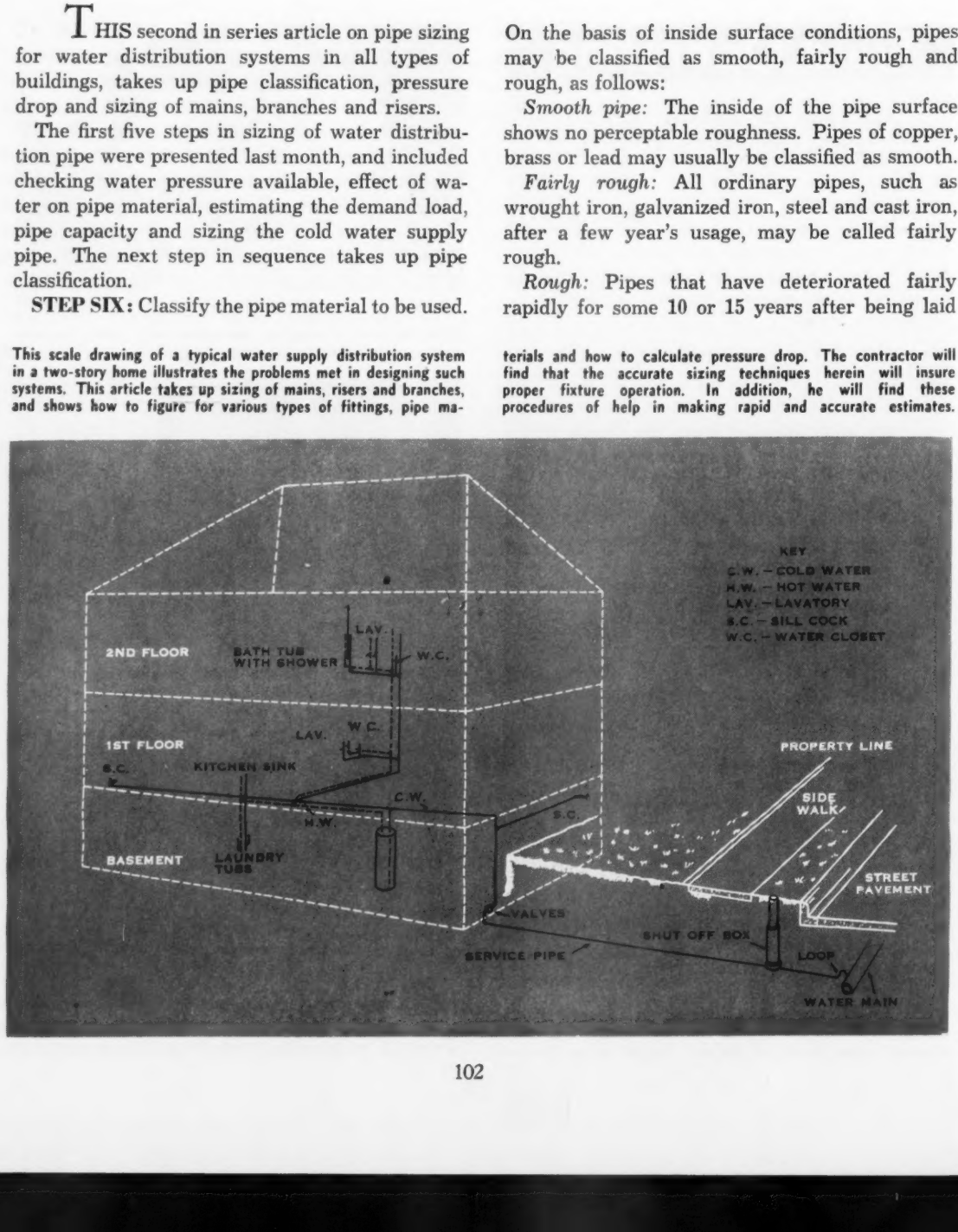
STEP SIX: Classify the pipe material to be used. On the basis of inside surface conditions, pipes may be classified as smooth, fairly rough and rough, as follows:

Smooth pipe: The inside of the pipe surface shows no perceptable roughness. Pipes of copper, brass or lead may usually be classified as smooth.

Fairly rough: All ordinary pipes, such as wrought iron, galvanized iron, steel and cast iron, after a few year's usage, may be called fairly rough.

Rough: Pipes that have deteriorated fairly rapidly for some 10 or 15 years after being laid

This scale drawing of a typical water supply distribution system in a two-story home illustrates the problems met in designing such systems. This article takes up sizing of mains, risers and branches, and shows how to figure for various types of fittings, pipe materials and how to calculate pressure drop. The contractor will find that the accurate sizing techniques herein will insure proper fixture operation. In addition, he will find these procedures of help in making rapid and accurate estimates.



are classified as rough.

Charts 4 and 5 give the pipe-friction losses corresponding to these classifications of pipe, for various nominal diameters, (for friction loss chart on copper pipe, see Chart No. 3, on page 89 of the May issue). To use these charts, let's take the following example: A 2½ in. fairly rough pipe supplies 100 gpm of water. Find the friction loss in head if the pipe length is 200 ft. The solution is: Enter Chart No. 4, at the right, at 100 gpm and move along this line until it intersects the 2½ in. diameter line. From this intersection point, move vertically down and read 4.5 psi friction loss per 100 ft of pipe. Total friction loss will then of course be twice 4.5, or 9 psi.

STEP SEVEN: Calculate pressure drop through fittings, valves and meters. In addition to pressure loss through pipe due to friction, there is a drop in pressure in pipe fittings, valves and the water meter. Estimated pressure losses for disc-type meters for various rates of flow are given in Chart No. 6. Flow limits for disc-type meters, which may be regarded as the limits of recommended ranges in capacities, are given in Table No. 3, below. For information on other types of meters, consult the manufacturer.

The registration on the meter dial will indicate the quantity recorded to be not less than 98 percent nor more than 102 percent of the water actually passed through the meter while it is being tested at rates of flow within the specified limits (see Table No. 3) under normal test-flow limits: There will be not less than 90 percent of the actual flow recorded when a test is made at the rate of flow set forth under minimum test flow.

TABLE THREE

Performance Requirements of Water Meters

Pipe Size, Inches	Normal Test-Flow Limits	Minimum Test-Flow
⅝	1 to 20	¼
¾	2 to 34	½
1	3 to 53	¾
1½	5 to 100	1½
2	8 to 160	2
3	16 to 315	4
4	28 to 500	7
6	48 to 1,000	12

Chart No. 4 at the right shows the variation of pressure loss with rate of flow for various types of faucets and cocks, based on experimental data obtained at the State University of Iowa. Table No. 4, on page 195, gives estimated pressure losses for pipe fittings and valves in terms of equivalent lengths of pipe.

The loss pressure through any fitting or valve can be expressed in pounds per square inch for

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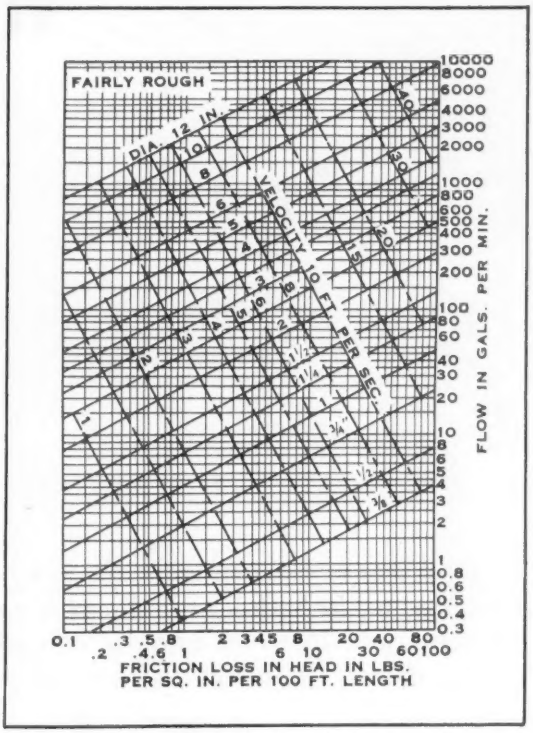


Chart 4: This flow chart for fairly rough pipe gives the pressure drop through given lengths of various sizes of this pipe in lbs/sq/in. Pipes in this classification are older iron and steel pipe. They have generally been in use for at least two or three years.

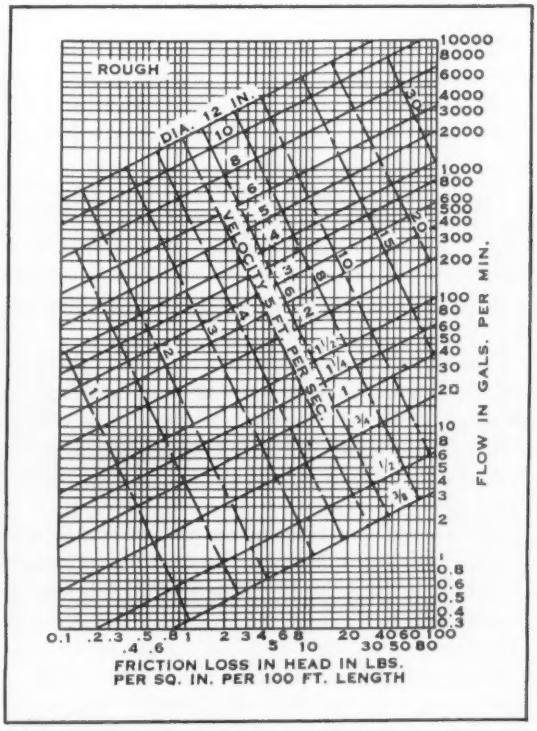


Chart 5: Flow chart for rough pipe, giving pressure drop in psi for given lengths of various sizes of pipe. Rough pipe is classified as rapidly deteriorated pipe in this shape about 10-15 years old. This pipe can be of wrought, galvanized or cast iron material.

HOT WATER...

Designed to do both a selling and a public relations job, this new booklet contains a wealth of sales pointers for water heaters

"NO GERM capable of producing disease in man can remain effective if boiling water actually reaches it for an instant," says W. R. Redden, M.D.

The above comment is typical of the strong selling points for water heaters contained in a new booklet, "Our Health . . . Our Strength," now being distributed by the Gas Appliance Manufacturers Association, Inc.

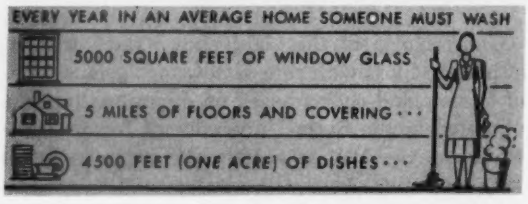
Domestic engineering dealers will find that the data in this interesting publication will arm them with additional "sales clinchers," pertinent and effective quotes from authoritative sources underscoring the importance of plenty of hot water for residential and industrial use.

Packed with facts and figures, such as the two samples shown at right, the booklet is designed to do a public relations job as well as a selling job. And the tone, objective throughout, is of the sort that is certain to inspire confidence and respect in prospective water heater customers.

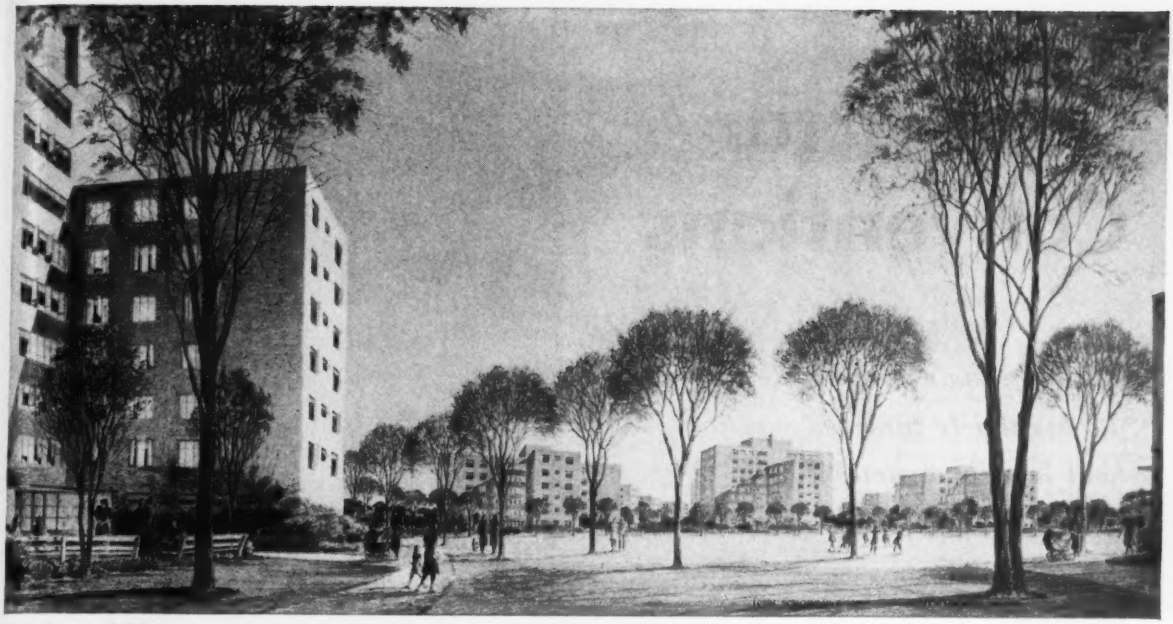
All of the manifold uses of hot water are touched on, and the proper temperature for each is listed. Copiously illustrated with interesting line-drawings, much of this material is of the sort that would lend itself to use in the dealer's newspaper and radio advertising.

Pointing out that 20 to 25 gallons of hot water per person per day is a fair estimate for the amount desirable for normal, emergency and special uses, the experts go on to stress that plenty of hot water is especially vital to the nation's health and strength in a period of national emergency.

This booklet, copies of which are available on request, contains plenty of material around which a water heater promotional program could well be built.


EVERY YEAR IN AN AVERAGE HOME SOMEONE MUST WASH
5000 SQUARE FEET OF WINDOW GLASS
5 MILES OF FLOORS AND COVERING · · ·
4500 FEET (ONE ACRE) OF DISHES · · ·

Reproduced above are two illustrations from the new booklet, "Our Health . . . Our Strength," which dramatizes the need for hot water. Of special interest to water heater dealers, the booklet is now available from the Gas Manufacturers Assn.



Dearborn Homes, Chicago Housing Authority—
Loebl, Schlossman & Bennett, Architects;
Robert Gordon, Inc., Heating Contractor;
Samuel R. Lewis & Associates, Mech. Eng.

KEWANEE
STEEL BOILERS

Cut Heating Costs in Housing Projects

In each of the four boiler rooms 2 Kewanee 5000 Series Boilers provide dependable heat . . . plus a plentiful supply of hot water for domestic use.

The Dearborn Housing Development, Chicago is an excellent example of the remarkable progress being made in "homey," economical mass housing.

Built in four separate units with one, two and three bedroom apartments, the project accommodates 800 families. And, *although designed for low rentals*, the buildings include such refinements as modern heating with wall hung convectors and fin type radiators.

Each of the four units is complete in itself with its own boiler room in which *2 Oil Fired Kewanee Boilers* produce heat at the rate of 7 million Btu hourly . . . ample capacity to provide heat plus an abundance of hot water for kitchen, laundry and bath.

Because of their long standing reputation for producing heat economically, Kewanee Boilers were the logical choice for Dearborn Homes as they are for many other important housing projects throughout America.

KEWANEE BOILER CORPORATION
KEWANEE, ILLINOIS
Eastern District Office: 40 West 40th Street, New York City 18
Division of American Radiator & Standard Sanitary Corporation

BUILDING BETTER BOILERS OVER 80 YEARS

Serving home and industry

AMERICAN STANDARD · AMERICAN BLOWER · CHURCH SEATS · DETROIT LUBRICATOR · KEWANEE BOILERS · ROSS HEATER · TONAWANDA IRON

Contractor Conventions

Domestic engineering dealers discuss timely topics at meetings held in several states

Above: Receiving his badge for the 59th annual convention of the Michigan Assn. of Master Plumbers is the association's oldest active member, Edward M. Harrigan. His son, Edward R., is looking on.

Michigan

THE PART the master plumber plays in civilian defense was the keynote of the 59th annual convention of the Michigan Assn. of Master Plumbers held at Muskegon recently.

Keynote speakers at the convention were Fred A. Porth, past president and chairman of the public relations committee, and William J. Millar. Millar told of the active participation of the Soo plumbers during the mock bombing raid on the Soo locks recently in which the domestic engineering dealers policed the water supply and guarded against fires and epidemics.

Mr. Porth related how the original N.A.M.P. efforts with Detroit's civilian defense authorities gained national recognition for the group by the entire plumbing industry.

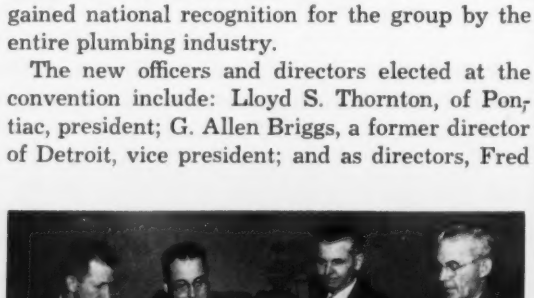
The new officers and directors elected at the convention include: Lloyd S. Thornton, of Pontiac, president; G. Allen Briggs, a former director of Detroit, vice president; and as directors, Fred Hubner, Sturgis; William A. Walmsley, Jackson; Walter Hafke, Detroit, serving his second term as secretary-treasurer, and William J. Millar, Sault Ste. Marie, and Ralph Gunthorpe, Lansing, serving their second terms as directors.

New York

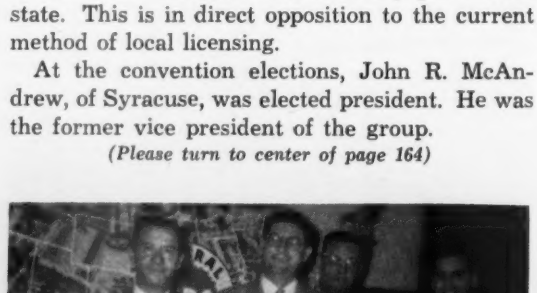
A PROPOSAL to have a state-wide licensing system for all apprentice, journeyman and master plumbers was under discussion at the recent convention of the New York State Assn. of Master Plumbers held in Brooklyn. According to the recommended proposal, once a person was licensed he would be allowed to work in any part of the state. This is in direct opposition to the current method of local licensing.

At the convention elections, John R. McAndrew, of Syracuse, was elected president. He was the former vice president of the group.

(Please turn to center of page 164)



Above: New officers and directors of the Michigan Assn. of Master Plumbers include W. A. Walmsley, G. A. Briggs, M. D. Tenny, L. S. Thornton, president, R. Gunthorpe, W. Hafke and W. J. Millar.



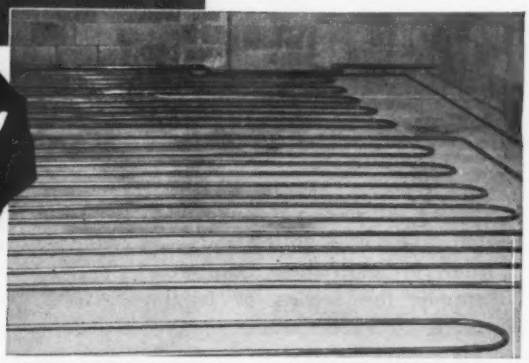
Above: Ready to answer all visitor's questions about details of the display of the Federal Boiler Company at the New York convention are, left to right, Ray Schuster, Ray Bohr, James Legg and Ray Roth.

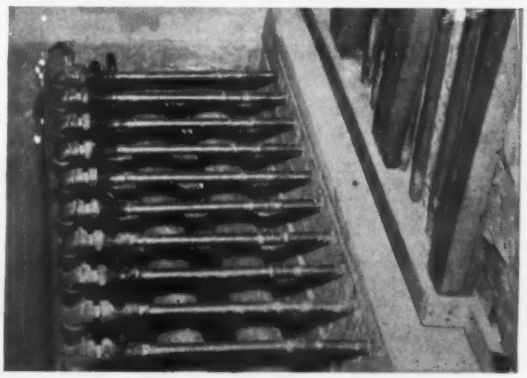
RAVENSWOOD PRESBYTERIAN CHURCH
Chicago, Ill.

(Below-Top) Section of radiant panel heating system before concrete was poured. 16,500 ft. of ¾"; 2,000 ft. of 1¼" and 1,500 ft. of 1½" Revere Copper Water Tube were used. Architect and Engineer, Benj. Franklin Olson; General Contractor, Harry C. Bjorklund & Son; Revere Distributor, The Davies Supply Co., all of Chicago. Harden Heating & Air Conditioning Co., of Elmwood Park, Ill., was Heating Contractor.

(Below-Bottom) Shows arrangement of balancing cocks on a return header. System was designed for zone control, a most important requirement for efficient operation in this type of edifice.

ANOTHER CASE OF *COPPER where it counts!*





CHURCHES, schools, colleges, municipal, office and similar buildings must be built to last. It's the only way to make them pay. That's why you'll find enduring materials like copper, brass and bronze used in so many places in so many of them.

The lasting quality of Revere Copper Water Tube was one of the reasons for its being used for the radiant panel heating system in the Ravenswood Church. Revere Copper Water Tube is non-rusting. It costs no more for workmen to install because its 60′ lengths are easy to bend and handle . . . it requires fewer fittings than rustable, short-lived materials. What joints are necessary are permanently soldered in a jiffy. That's why more and more architects, engineers, builders and contractors have been using it where it counts.

Although copper tube cannot now be used in civilian installations of radiant panel heating, we cite the Ravenswood Presbyterian Church to remind you of the merits of Revere Copper Water Tube over other materials so that when copper is once more permitted you will again use it. Meantime remember, you can still use Revere Copper Tube in underground service lines, domestic hot and cold water supply lines, industrial processing and for gas equipment.

Revere Copper Water Tube is available in hard and soft tempers in straight lengths; also in 60′ coils in soft temper. Each length is marked with the Revere name. Look for this mark. It assures you of uniform quality. These materials are available through your Revere Distributor, who will also put you in touch with Revere's Technical Advisory Service in the event you wish to discuss your technical problems.

REVERE 150TH YEAR OF SERVICE TO AMERICA

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

• • •

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.— Sales Offices in Principal Cities, Distributors Everywhere.

SEE "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

PLUMBING FOR A NEW INDUSTRIAL PLANT

Part Four of a Series

Five Contractors Take Over DEFENSE JOBS

Here's the story of a plumbing contractor's part in the construction of a vital industrial plant designed to fill civilian and military needs

WARS are not fought with guns alone. Fighting men get hungry, and Uncle Sam must supply the means of feeding them. Thus it is that manufacturing plants devoted to food processing are among the most vital of the nation's industrial mobilization program.

Such a plant is the new National Biscuit bakery now under construction in South Side Chicago. And Economy Plumbing and Heating, the plumbing contractors for this huge job, are hard at work with the fuel, water and process piping.

Called "the world's largest cracker and cookie bakery," the plant when completed will augment present facilities in Chicago and may replace bakeries in several smaller cities. It will be available for either or both civilian and military production, depending of course upon what the Government demands.

Built on an L-shaped 50-acre lot, the big bakery will have more than 800,000 square feet of floor space. It will be two stories high, about 700 feet wide by 1, 137 feet long, with a large tower section 135 feet high, the equivalent of a 13 story building.

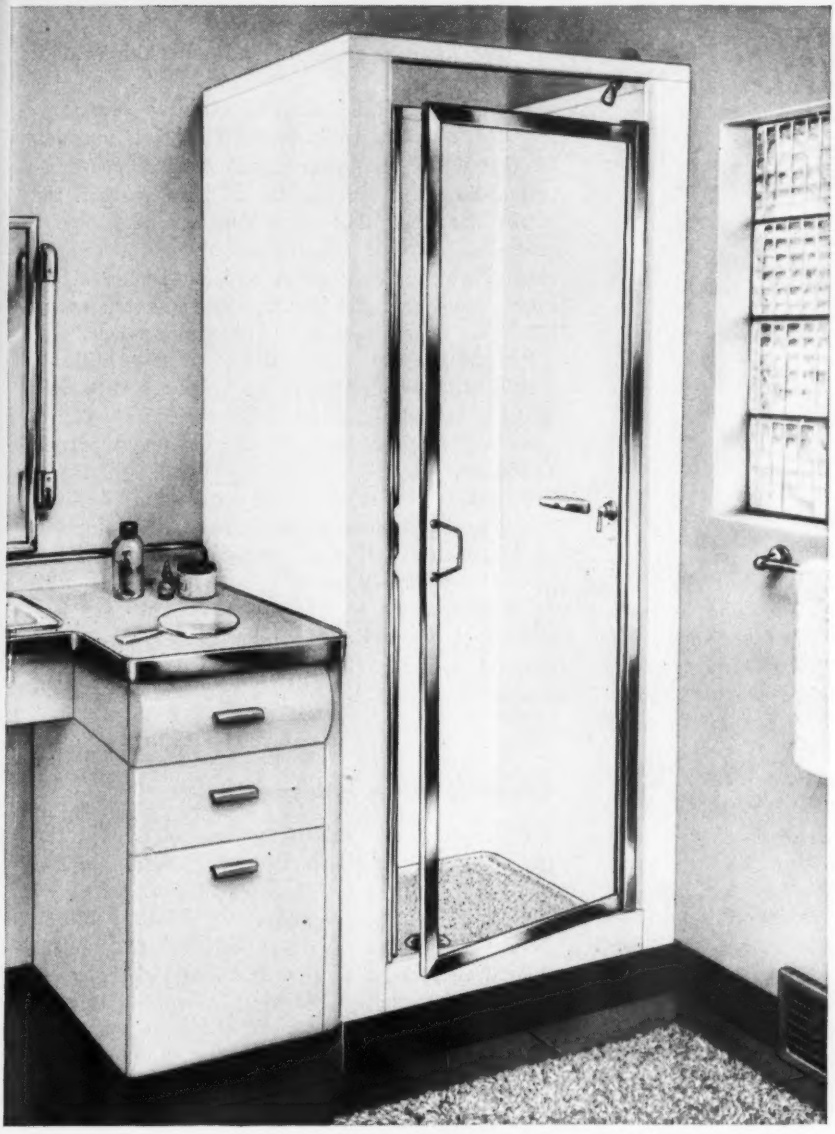
Baking cookies, cakes, crackers and other such goods will be done on an assembly line basis.

(Please turn to top of page 227)

Shown above is a steam fitter at work on a header. Not completed, the plant is being constructed for National Biscuit Co. Architects: A. D. Crosett, New York.

Two foremen from Economy Plumbing and Heating, Chicago, are shown checking installed dimensions of plumbing against blueprint specifications. Note pipe size.

Two more of Economy's men are shown at work on a gas header. Aside from the conventional piping, gas, steam and vacuum lines are used. Plant covers 800,000 sq ft.



SKIPPER

SPECIFICATIONS

SKIPPER DELUXE
MODEL 180

Size: 32" x 32" x 76".

Receptor: Semi-flat type, terrazzo made of black and white marble chips and white cement. Ground and polished.

Walls: Bonderized, galvanized steel.

Finish: Baked-on white synthetic enamel inside and out.

Standard Trim: 2-386 chromium plated brass valves on 5" centers and shower head, curtain, hooks and soap dish.

Important: Side panels of Model No. 180 Skipper Shower are reversible and valves can be installed on either left or right side. Available, Neptune door is also reversible and can be installed either left or right.

FIAT *DeLuxe* SKIPPER SHOWER CABINET

MODEL NO. 180 ***(can be equipped with Neptune door as shown)***

Now furnished with a terrazzo receptor and 5" center No. 2-386 valves, the Deluxe Skipper moves up to a position of new importance as a quality shower. Ever since the redesigned Skipper model was introduced several years ago it has led all other shower models in popularity. The beauty of smart styling combined with sound construction makes the Skipper top value in shower cabinets and suitable for any home or industrial installation.

The Deluxe Skipper will be carried in stock by leading plumbing wholesalers along with the standard Model 18 Skipper.

FIAT

FIAT METAL MANUFACTURING COMPANY

Three Complete Manufacturing Plants

(Chicago area plant) Franklin Park, Ill.

Long Island City 1, N. Y. **Los Angeles 33, Calif.**

In Canada: Fiat showers are made by Porcelain and Metal Products, Ltd. Orillia, Ontario

LPGA and GAMA Hold Meetings in Chicago

Speakers at both conventions discuss the future of business under the mobilization economy

LP-Gas Association

STRONG PLEAS for two vitally needed industry efforts—increased storage facilities and sustained promotional activity—were the themes of the 20th anniversary convention and trade show of the Liquefied Petroleum Gas Assn., held at Chicago, May 7-10. Approximately 2200 persons attended this convention.

In his annual report, Peter A. Anderson, LPGA president, told association members that LP-Gas cooks upwards of 60,000,000 meals each day. It is also heating hundreds of thousands of homes in the winter, refrigerating their food, heating their water and performing other household tasks. In addition, he said, industrial uses have increased phenomenally.

Mr. Anderson pointed out that during the present national emergency LP-Gas could make the following contributions: (1) release quantities of gasoline for military use; (2) make use of its specialized applications for defense work, and (3) provide fuel at home and with the armed forces.

Howard D. White, LPGA executive secretary told the convention that practically all uses of LP-Gas will feel the impact of government control during the emergency. "There can be no doubt," he said, "that operations will be severely curtailed. It will require all our resources to maintain equipment at a satisfactory level of service and safety with increasing shortages of the basic necessities and skilled manpower."

James E. Pew, immediate past president, warned that the industry faces a grave responsibility to increase storage facilities as a safe-guard against possible recurrence of a critical shortage condition.

At the final session of the convention, William S. Lander, president of the Rulane Gas Company of Charlotte, N.C., was elected president of the association. Other newly elected officers include F. N. Mabee, vice president; C. M. Ambrose, Jr., second vice president; Walter Miller, treasurer, and Howard D. White, reappointed as executive secretary.

Gas Appliance Manufacturers

GAS PRODUCERS AND SUPPLIERS need only the approval of the Federal Power Commission, and assurance of adequate steel supplies, to launch an expansion program aggregating almost a billion dollars, Frederick O. Hess, president of the Gas Appliance Manufacturer's Assn., said at the opening session of the group's 16th annual meeting.

As a partial solution to this situation, the Petroleum Administration for Defense has asked the National Production Authority to take steps to

(Please turn to top of page 217)

Above: William S. Lander, at left, receives congratulations from Peter A. Anderson on his election to the presidency of the LP-Gas Assn. Looking on is F. N. Mabee, new first vice president.

Above: Peter A. Anderson, at left, former president, and Howard D. White, at right, executive secretary, were two of the keynote speakers at the recent Liquified Petroleum Gas Assn. convention.

"REPUBLIC" MAKES GREAT STRIDES!

REPUBLIC NEWS

FOR HOT WATER MAGIC GAS has got it!

VOL. 1, NO. 1 | *Published by* REPUBLIC HEATER CORP. | *"For Those Interested in the Best"*

BUILDING 90,000 SQ. FT. ULTRA-MODERN STRUCTURE TO HOUSE THE FINEST EQUIPMENT FACILITIES FOR PRODUCING THE ULTIMATE IN HOT WATER HEATERS

Representing an investment of approximately $1,000,000 in land, building and equipment, a new plant is under construction for the Republic Heater Corp. in the Los Angeles International Airport Industrial Tract at Century boulevard and Inglewood-Redondo road, it was announced today by Milton J. Stevens, president of the corporation.

Described as one of the largest plants to be built in Southern California in 1951, the new factory will cover 90,000 square feet of floor space. Site is five acres. Designed by Architect S. Charles Lee, the building will be of box-car height, with facilities to load and unload six box-cars simultaneously.

Republic Heater Corp.-at present situated at 2231 Randolph street, Huntington Park, manufactuers gas water heaters for national distribution. It now manufactures 100,000 heaters annually, and expects to double its production during the next year.

In line with its physical expansion, the firm will soon start manufacturing circulating gas wall heaters, gas floor furnaces, water softeners and air-conditioning units.

Also as part of its expansion program, Republic is negotiating for acquisition of large manufacturing plants in the Middle West and Texas, and has added 125 national distributors to its list of outlets.

Republic Leadership in Men, Machines and Permanent Policy Makes Progress Possible

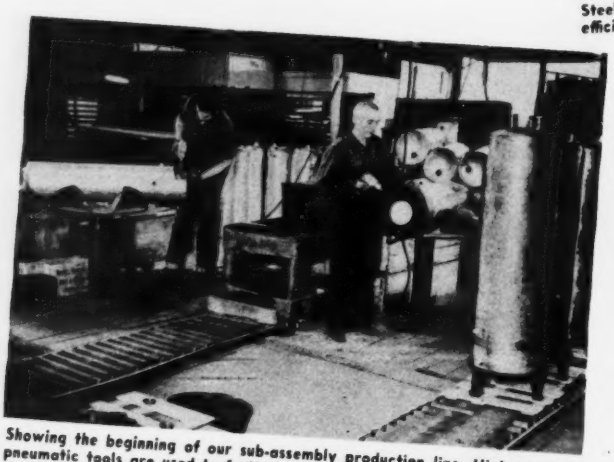
(SEE PAGES 2, 3, AND 4)

$1,000,000 FOR EXPANSION

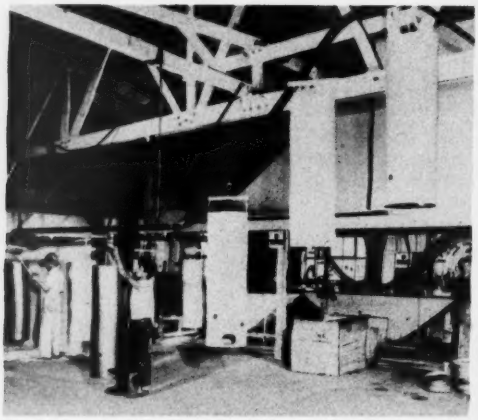
REPUBLIC HEATER OPERATION IN FU

Showing high-speed and efficient operations of the various phases of making the finest water heaters in the world. Men, machines and modern and scientific equipment blend to produce a product of quality that meets the highest standards of the most critical buyers and a variety of sizes and styles that satisfies every need and requirement.

Steel jacket automatic rolling and forming division, employing the most efficient phases of precision forming and Pittsburgh lock seaming.

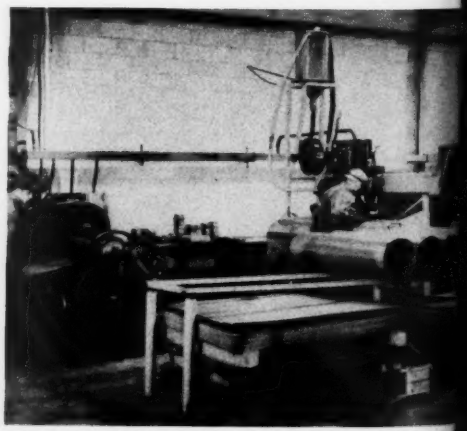


Showing the beginning of our sub-assembly production line. High powered pneumatic tools are used to fasten legs and bottom pans of heaters, assuring sturdy, built-like-battleship, high standards of Republic Heater quality.



Paint spray booths and automatic conveyor lines are shown bringing the gleaming white baked finish of Dupont Dulux in and out of our giant indirect gas-fired bake oven. All Republic parts are baked and rust proofed.

Sub-assembly for burners, tips, pilots and thermostats. A very important phase of the over-all operation as it constitutes the heart and core of all Republic water heaters.



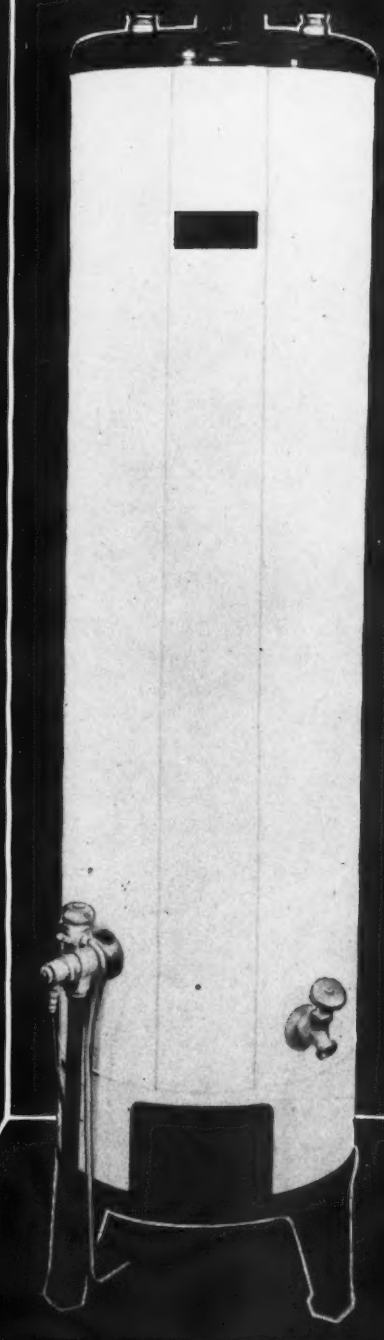
Partial view of the newest, most modern boiler making dep constant automatic conveyor system brings the tanks fro and hydrostatic pressure tests.

BE HOT WATER HAPPY WITH REPUBLIC

REPUBLIC

AUTOMATIC
NEW STANDARD MODEL

a **NEW** standard in water heaters



24 HOUR ECONOMY

Designed for ECONOMICAL, efficient service round-the-clock. Life-time, FIBERGLAS insulation retains heat . . . assures a substantial saving in fuel costs. New one-piece burner provides equal heat distribution, faster recovery.

SAFETY FEATURES

NEW GRAYSON UNITROL, JR., the efficient Electro-Magnetic Automatic Pilot, assures safe lighting and certain cut-off of gas to main burner in case of pilot failure.

STURDIER CONSTRUCTION

Durable, COPPER BEARING STEEL tank, galvanized inside and out, and tested at 300 lbs. hydrostatic pressure, adds more service to the life of the heater.

Specifications on Reverse Side

REPUBLIC HEATER CORP.

2201 Randolph Street

Huntington Park, California

3 year warranty plan

AGA approved

specifications

Thermostat . . . New Grayson Unitrol Jr., the efficient Electro-Magnetic Automatic Pilot, assures safe lighting and certain cut-off of gas to main burner in case of pilot failure.

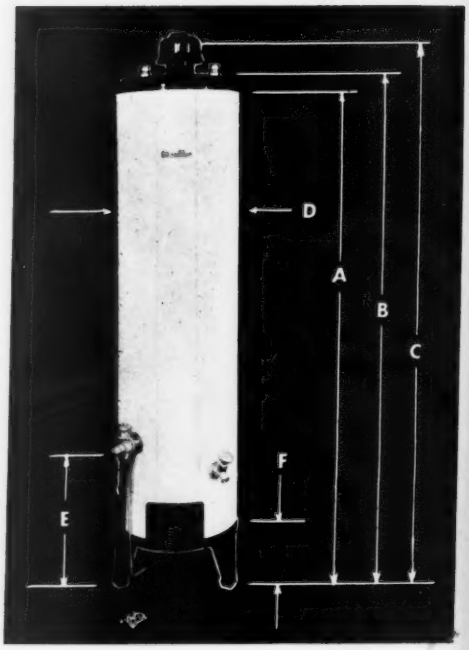
Storage Tank . . . Tank constructed of durable copper-bearing steel galvanized inside and out and tested at 300 lbs. hydrostatic pressure, adds more service to the life of the heater.

Insulation . . . Life-time FIBERGLAS insulation retains heat, assures a substantial saving in fuel costs.

Burner . . . A one-piece cast iron vertical type burner. This burner is designed to give maximum efficiency. The air shutter is adjustable and is designed to compensate for different gas types and mixtures in all locations.

Jacket Finish . . . DUPONT DULUX porcelain tone white enamel with black enamel trim.

AVAILABLE FOR LP GASES AT SMALL EXTRA CHARGE



HI-RECOVERY

NEW STANDARD MODEL
3 YEAR WARRANTY

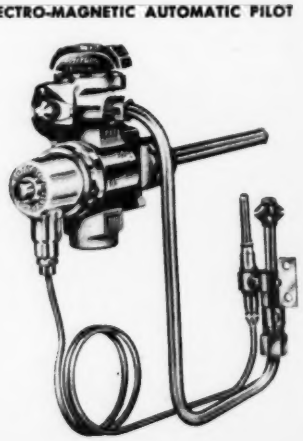
CAPACITY IN U. S. GALLONS	20 New Std.	30 New Std.	40 New Std.
REHEAT PER HR. IN U. S. GALLONS	30.8	30.8	42
BURNER RATING IS B.T.U. PER HR.	22,000	22,000	30,000
SIZE GAS SUPPLY	½"	½"	½"
SIZE HOT WATER	¾"	¾"	¾"
SIZE COLD WATER	¾"	¾"	¾"
SPREAD HOT COLD WATER	8"	8"	8"
VENT SIZE	3"	3"	3"
TANK THICKNESS	13 ga.	13 ga.	12 ga.
BOTTOM HEAD THICKNESS	9 ga.	9 ga.	8 ga.
TOP HEAD THICKNESS	10 ga.	10 ga.	9 ga.
FLUE THICKNESS	10 ga.	10 ga.	10 ga.
COLOR OF BODY	White	White	White
COLOR OF TRIM	Black	Black	Black

GRAYSON UNITROL JR. INCLUDED. Available for LP gases at small extra charge.

SIZE OF HEATER	A	B	C	D	E	F
20	55"	51"	69"	14⅜"	16"	5½"
30	59"	61"	64"	16⅜"	16"	5½"
40	62½"	64¼"	68"	18⅜"	16"	5½"

GRAYSON UNITROL JR.

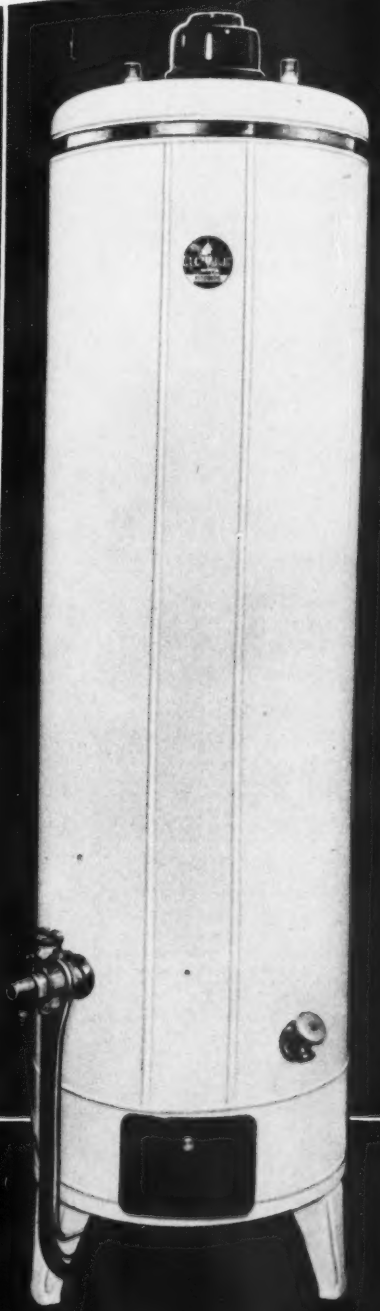
WITH ELECTRO-MAGNETIC AUTOMATIC PILOT



WATER MAGIC GAS has got it!

a NEW "CHALLENGE" in WATER HEATERS

REPUBLIC CHALLENGER



AMAZING PERFORMANCE

Gas consumption and fuel costs are reduced by new, modern improvements. The new mushroom burner with ports scientifically designed equalizes heat distribution to penetrate the tank more effectively and economically. Non-settling, life-time Fiberglas insulation keeps water hot much longer. EXTRA FAST REHEATING.

SAFETY FEATURES

NEW GRAYSON UNITROL, JR., the efficient Electro-Magnetic Automatic Pilot, assures safe lighting and certain cut-off of gas to main burner in case of pilot failure.

STURDIER CONSTRUCTION

Durable, COPPER BEARING STEEL tank, galvanized inside and out, and tested at 300 lbs. hydrostatic pressure, adds more service to the life of the heater.

Specifications on Reverse Side

REPUBLIC HEATER CORP.

2231 Randolph Street,
Huntington Park, California

AGA approved

5 year warranty plan

BE HOT WATER HAPPY WITH REPUBLIC

SPECIFICATIONS

Thermostat . . . New Grayson Unitrol Jr., the efficient Electro-Magnetic Automatic Pilot, assures safe lighting and certain cut-off of gas to main burner in case of pilot failure.

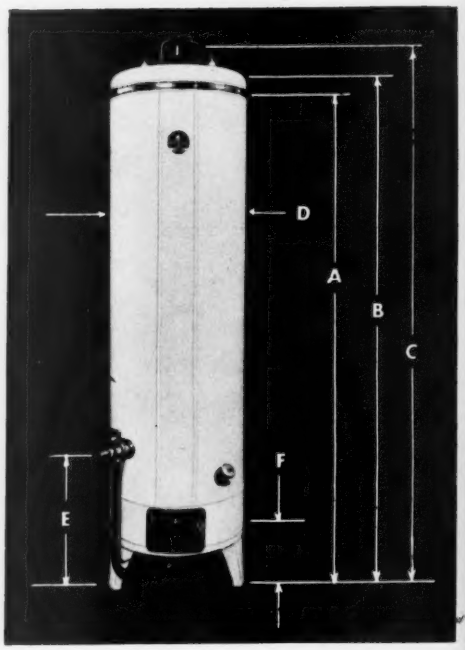
Storage Tank . . . Tank constructed of durable copper-bearing steel galvanized inside and out and tested at 300 lbs. hydro-static pressure, adds more service to the life of the heater.

Insulation . . . Life-time FIBERGLAS insulation retains heat, assures a substantial saving in fuel costs.

Burner . . . A one-piece cast iron vertical type burner. Approved by the American Gas Association, this burner is designed to give maximum efficiency. The air shutter is adjustable and is designed to compensate for different gas types and mixtures in all locations.

Jacket Finish . . . DUPONT DULUX porcelain tone white enamel with black enamel trim.

AVAILABLE FOR LP GASES AT SMALL EXTRA CHARGE



SIZE OF HEATER	A	B	C	D	E	F
20	55"	51"	69"	14⅜"	16"	5½"
30	59"	61"	64"	16⅜"	16"	5½"

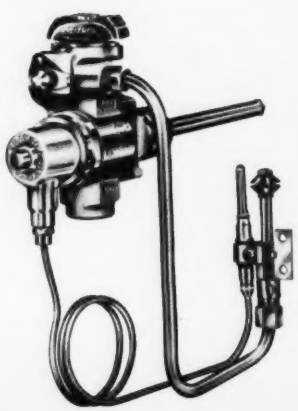
REPUBLIC CHALLENGER MODEL
5 YEAR WARRANTY

CAPACITY IN U. S. GALLONS	20 Challenger	30 Challenger
REHEAT PER HR. IN U. S. GALLONS	*30.8	*30.8
BURNER RATING IS B.T.U. PER HR.	22,000	22,000
SIZE GAS SUPPLY	½"	½"
SIZE HOT WATER	¾"	¾"
SIZE COLD WATER	¾"	¾"
SPREAD HOT COLD WATER	8"	8"
VENT SIZE	3"	3"
TANK THICKNESS	12 ga.	12 ga.
BOTTOM HEAD THICKNESS	7 ga.	7 ga.
TOP HEAD THICKNESS	8 ga.	8 ga.
FLUE THICKNESS	10 ga.	10 ga.
COLOR OF BODY	White	White
COLOR OF TRIM	Black	Black

GRAYSON UNITROL JR. INCLUDED. Available for LP gases at small extra charge. *60% rise.

GRAYSON UNITROL JR.

WITH ELECTRO-MAGNETIC AUTOMATIC PILOT



REPUBLIC

AUTOMATIC HI-RECOVERY
HEAVY DUTY AND DELUXE MODELS

NO heater

does so much for so little

GRAYSON UNITROL JR. THERMOSTAT

The Grayson Unitrol Jr. is standard equipment on this model. Grayson 100% Unitrol "A" is available on L.P.G. heaters at a slightly higher price. This control combines three essential controls in a single unit; a snap action thermostat, a snap action automatic pilot and a large capacity gas cock. A simple single pipe thread connection into a water heater tank installs the complete unit. Strong, positive, rugged — no flimsy attaching gadgets.

STORAGE TANK

Tank constructed of extra heavy copper bearing steel galvanized both inside and out and tested at 300 lbs. hydrostatic pressure.

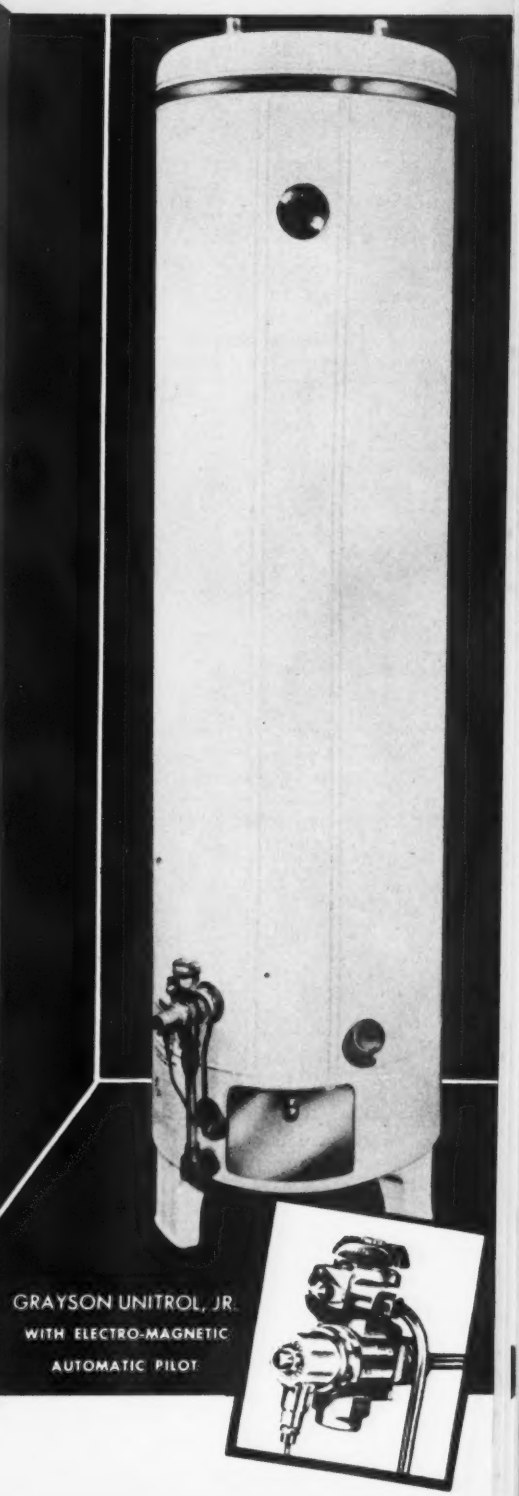
INSULATION

A thick blanket of heat-hoarding FIBERGLAS insulation. This efficient, non-settling, life-time insulation keeps water hot longer, saves fuel and money.

MAGIC ECON-O-MIZER BANJO BURNER

A one piece cast-iron burner is attached solidly to the bottom pan preventing dislocation in shipping. Approved by the American Gas Association, this scientifically designed burner with raised ports assures equal heat distribution on the bottom of the tank. The air shutter is adjustable and is designed to compensate for different gas types and mixtures in all locations.

Additional Specifications on Reverse Side.



GRAYSON UNITROL, JR.
WITH ELECTRO-MAGNETIC
AUTOMATIC PILOT

REPUBLIC HEATER CORP.

2231 Rindelph Street,

Huntington Park, California

FOR HOT WATER MAGIC
GAS has got it!

Approved

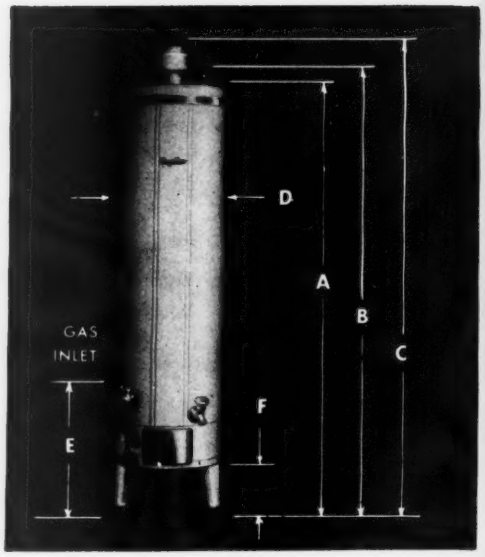
specifications

HEAVY DUTY HI-RECOVERY MODEL

10 YEAR WARRANTY

CAPACITY IN U. S. GALLONS	20 H.D.	30 H.D.	40 H.D.	50 H.D.
REHEAT PER HR. IN U. S. GALLONS	35	42	42	42
BURNER RATING IN B.T.U. PER HR.	25,000	30,000	30,000	30,000
SIZE GAS SUPPLY	½"	½"	½"	½"
SIZE HOT WATER	¾"	¾"	¾"	¾"
SIZE COLD WATER	¾"	¾"	¾"	¾"
SPREAD HOT & COLD WATER	8"	8"	8"	8"
VENT SIZE	3"	3"	3"	3
TANK THICKNESS	10 ga.	10 ga.	10 ga.	10 ga.
BOTTOM HEAD THICKNESS	7 ga.	7 ga.	7 ga.	8 ga.
TOP HEAD THICKNESS	8 ga.	8 ga.	8 ga.	9 ga.
FLUE THICKNESS	10 ga.	10 ga.	10 ga.	10 ga.
COLOR OF BODY	White	White	White	White
COLOR OF TRIM	Chrome	Chrome	Chrome	Chrome

100% *GRAYSON UNITROL included. No extra for L.P.G.



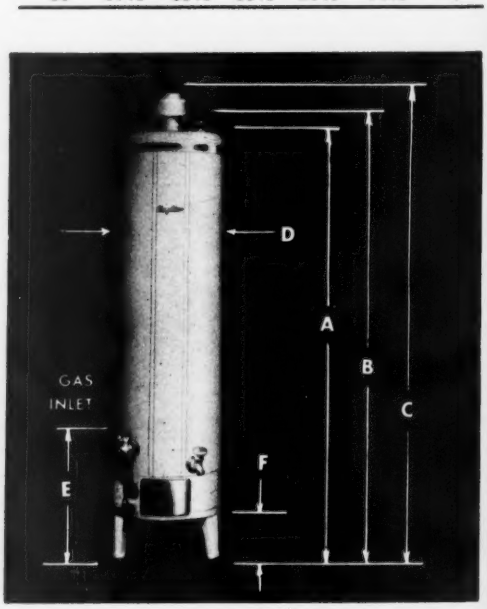
SIZE OF HEATER	A	B	C	D	E	F
20	54⅛"	55¾"	60½"	14⅜"	14½"	4"
30	60½"	62¼"	66½"	16⅜"	14½"	4"
40	61"	62¾"	66½"	18⅜"	14½"	4"
50	61½"	63½"	66½"	20⅜"	14½"	4"

DELUXE HI-RECOVERY MODEL

5 YEAR WARRANTY

CAPACITY IN U. S. GALLONS	20 DLX	30 DLX	40 DLX	50 DLX
REHEAT PER HR. IN U. S. GALLONS	35	42	42	42
BURNER RATING IN B.T.U. PER HR.	25,000	30,000	30,000	30,000
SIZE GAS SUPPLY	½"	½"	½"	½"
SIZE HOT WATER	¾"	¾"	¾"	¾"
SIZE COLD WATER	¾"	¾	¾"	¾"
SPREAD HOT & COLD WATER	8"	8"	8"	8"
VENT SIZE	3"	3"	3"	3"
TANK THICKNESS	12 ga.	12 ga.	12 ga.	10 ga.
BOTTOM HEAD THICKNESS	8 ga.	8 ga.	8 ga.	8 ga.
TOP HEAD THICKNESS	9 ga.	9 ga.	9 ga.	9 ga.
FLUE THICKNESS	10 ga.	10 ga.	10 ga.	10 ga.
COLOR OF BODY	White	White	White	White
COLOR OF TRIM	Chrome	Chrome	Chrome	Chrome

100% *GRAYSON UNITROL included. No extra for L.P.G.



SIZE OF HEATER	A	B	C	D	E	F
20	54⅛"	55¾"	60½"	14⅜"	14½"	4"
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40	61"	62¾"	66½"	18⅜"	14½"	4"
50	61½"	63½"	66½"	20⅜"	14½"	4"

REPUBLIC

automatic heavy duty and deluxe models

The heater that has

EVERYTHING

NEW CABINET BASE STYLE

Clean sturdy lines give these models greater eye-appeal. Finished in gleaming white DUPONT DULUX enamel and trimmed in sparkling chrome. Cleans easily. Retains its smart appearance the life of the heater.

NEW PATENTED IMPROVEMENTS

The "Magic-Econ-o-mizer" with raised ports on the new one-piece Banjo Burner equalizes heat distribution at the bottom of the tank. This scientific burner has been approved by the AMERICAN GAS ASSOCIATION

GUARANTEED PERFORMANCE

The GRAYSON UNITROL JR. with Electro-Magnetic Automatic Pilot assures safe, ECONOMICAL performance . . . and a CONTINUOUS supply of hot water. Efficient FIBERGLAS insulation retains heat, keeps water hot much longer. Fast reheating.

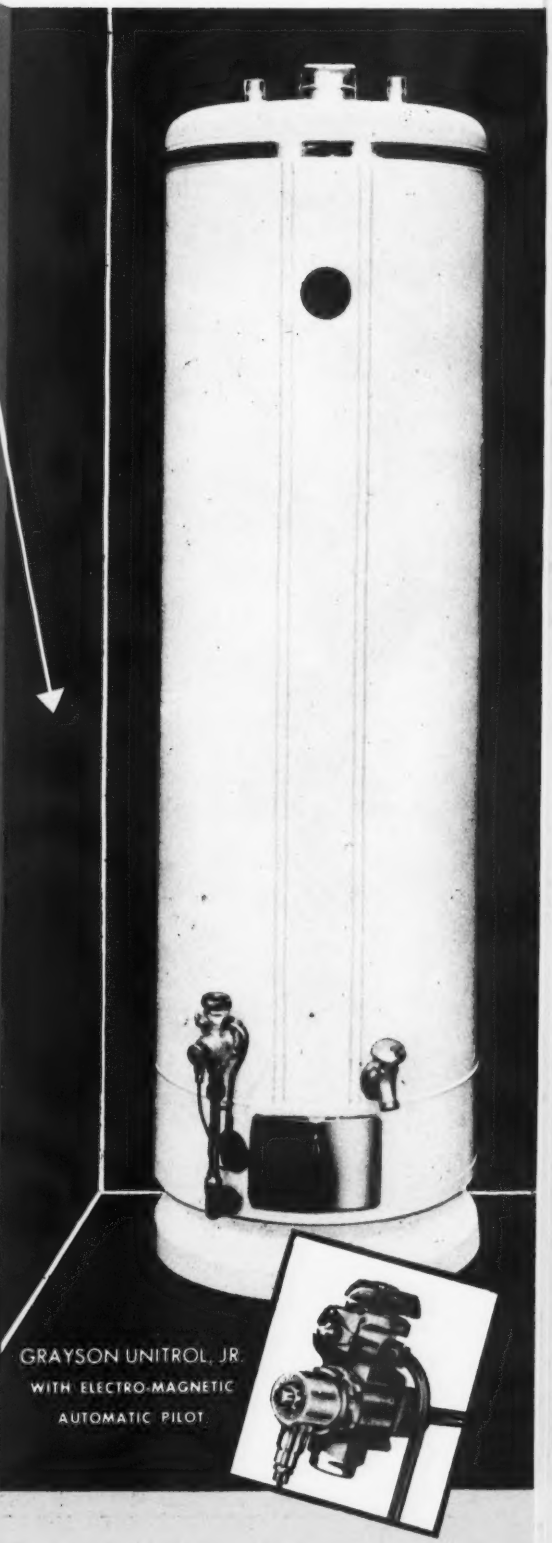
Specifications on Reverse Side

REPUBLIC HEATER CORP.

2231 Randolph Street,

Huntington Park, California

FOR HOT WATER MAGIC GAS has got it!



GRAYSON UNITROL JR.
WITH ELECTRO-MAGNETIC
AUTOMATIC PILOT

specifications

HEAVY DUTY MODELS
10 YEAR WARRANTY

CAPACITY IN U. S. GALLONS	20-B	30-B	40-B
REHEAT PER HR. IN U. S. GALLONS	35	42	42
BURNER RATING IN B.T.U. PER HR.	25,000	30,000	30,000
SIZE GAS SUPPLY	½"	½"	½"
SIZE HOT WATER	¾"	¾"	¾"
SIZE COLD WATER	¾"	¾"	¾"
SPREAD HOT & COLD WATER	8"	8"	8"
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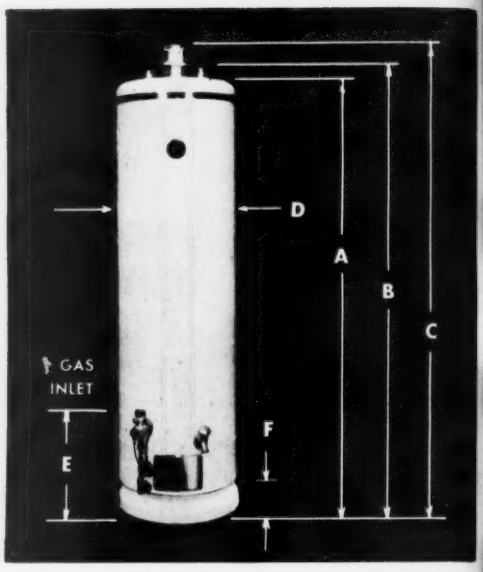
BOTTOM HEAD THICKNESS	7 ga.	7 ga.	7 ga.
TOP HEAD THICKNESS	8 ga.	8 ga.	8 ga.
FLUE THICKNESS	10 ga.	10 ga.	10 ga.
COLOR OF BODY	White	White	White
COLOR OF TRIM	Chrome	Chrome	Chrome



SIZE OF HEATER	A	B	C	D	E	F
20	54"	56"	59¼"	14⅜"	14½"	4"
30	60½"	62½"	65¾"	16⅜"	14½"	4"
40	61"	63"	66½"	18⅜"	14½"	4"

DELUXE HI-RECOVERY
5 YEAR WARRANTY

CAPACITY IN U. S. GALLONS	20-B	30-B	40-B
REHEAT PER HR. IN U. S. GALLONS	35	42	42
BURNER RATING IN B.T.U. PER HR.	25,000	30,000	30,000
SIZE GAS SUPPLY	½"	½"	½"
SIZE HOT WATER	¾"	¾"	¾"
SIZE COLD WATER	¾"	¾"	¾"
SPREAD HOT & COLD WATER	8"	8"	8"
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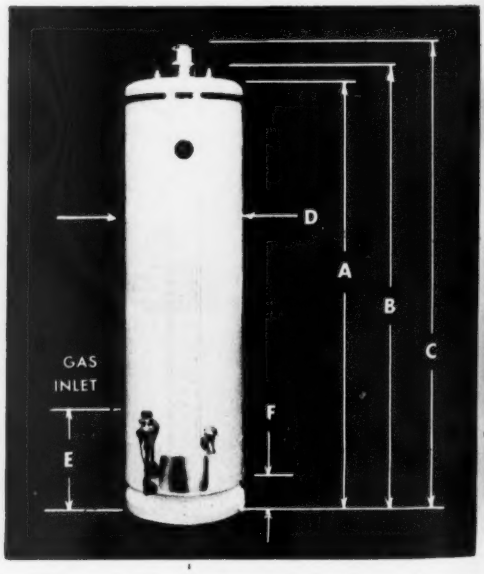
TOP HEAD THICKNESS	9 ga.	9 ga.	9 ga.
FLUE THICKNESS	10 ga.	10 ga.	10 ga.
COLOR OF BODY	White	White	White
COLOR OF TRIM	Chrome	Chrome	Chrome



SIZE OF HEATER	A	B	C	D	E	F
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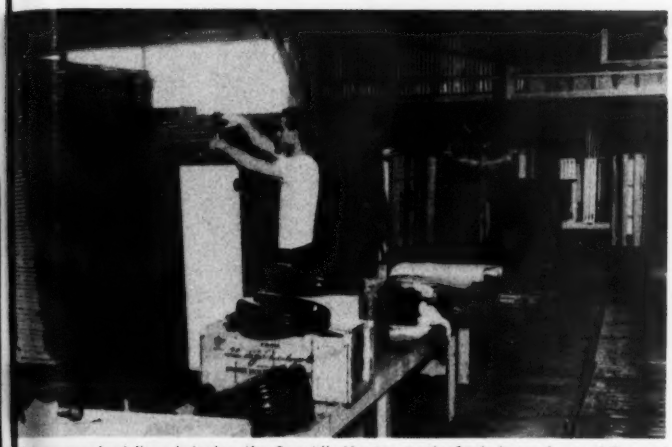
30	60½"	62½"	65¾"	16⅜"	14½"	4"
40	61"	63"	66½"	18⅜"	14½"	4"

SWING AT HUNTINGTON PARK PLANT

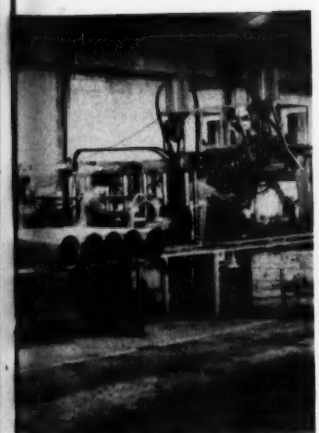


ic conveyorized lines bringing the Republic Heaters to the final phase of assembling and after final inspection.

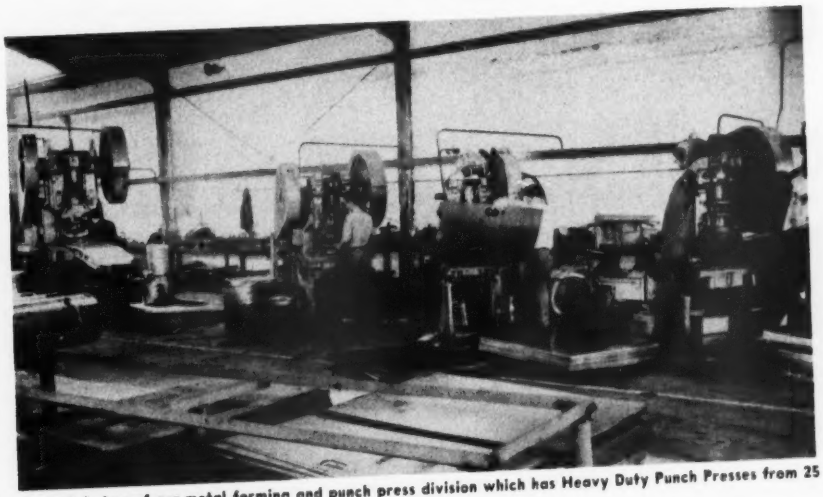
Final assembly and testing division. Every heater is burner tested to make certain of an even-glow blue flame. Every Grayson thermostat which is used exclusively in all Republic water heaters is adjusted ready for use.

duty Owens-Corning fiberglass insulation is shown double insulating production lines.

All Republic burners are machined and tested in our modern machine drill press division, which is automatically geared with high standard equipment and men.



capable of producing a tank a minute. A the production line on through air, water



A partial view of our metal forming and punch press division which has Heavy Duty Punch Presses from 25 to 400 tons capacity.

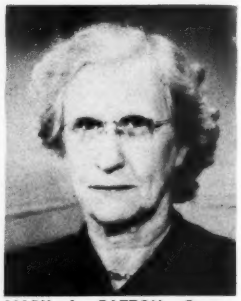
E WORLDS' FINEST LINE OF WATER HEATERS

PART OF THE REPUBLIC HEATER EXECUTIVE STAFF

HAROLD ROWNTREE, Assistant to the President, in charge of the Purchasing Division and Member of the Executive Committee.

OPAL MITCHELL, Vice-president, National Sales Manager and Member of the Executive Committee.

JOEL FRENCH, General Plant Manager in charge of Planning and Engineering; Member of Executive Committee.



MARY A. PATTON, Comptroller, Office and Credit Manager.

HENRY LaBOUS, Sales Manager for States of California, Oregon, Washington, Arizona and Nevada.

MILTON J. STEVENS, President and Chairman of the Board of Republic Heater Corporation.

MILTON E. MOORE, Sales Manager for States of Oklahoma, Texas and Louisiana.

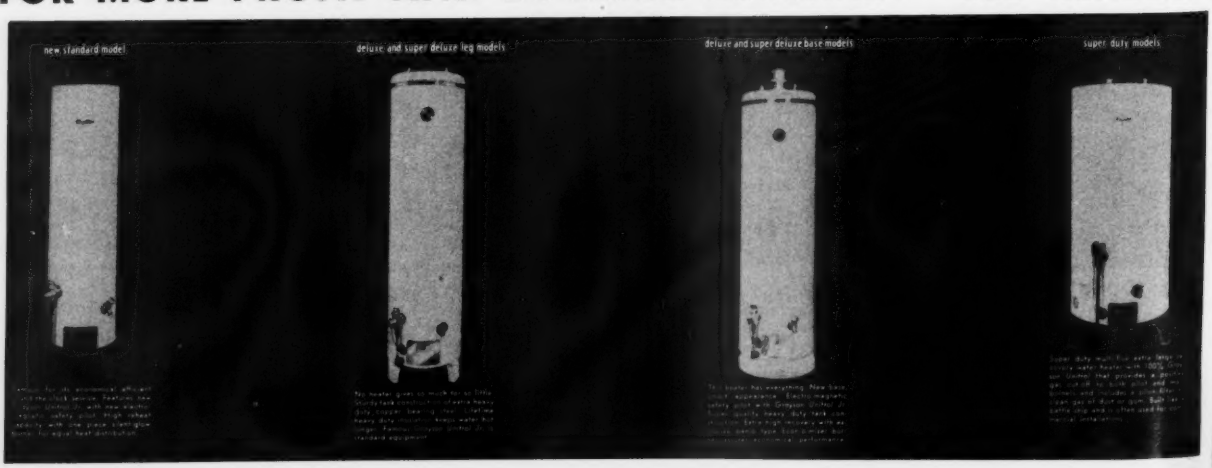
J. E. HURSTON, Sales Representative for the States of Tennessee, Arkansas and Mississippi.

JAMES E. GRAY, Sales Manager for States of Utah, Montana, New Mexico, Colorado, Wyoming, North and South Dakota.

FRANK W. SIEFFERT, Sales Manager for States of Illinois, Indiana, Wisconsin and Minnesota.

MITCHELL SMITH, Sales Manager for State of Michigan.

FOR MORE PROFIT AND 24-HOUR ECONOMY — USE REPUBLIC!



According to LAW

★ Part Nine of a Series ★

This continuing review of legal decisions will help plumbing, heating and air conditioning contractors avoid litigation . . .

MODERN HIGHER COURTS HOLD that all city ordinances are void which require a plumber to obtain a license, if he has already obtained one from the state.

An individual had been issued a license by the state licensing board after successfully passing an examination. To carry on his business within the city, he applied to the clerk for a license.

Passing the State Exam Is Sufficient

The clerk refused to issue such a license on the grounds that the contractor had not first submitted to examination before the city board of plumbers and had not obtained a certificate as required by city ordinance.

In subsequent litigation, the higher court held that the city could not compel an individual to pass an examination and obtain a certificate of competency before engaging in plumbing work in the city, because he held a license and certificate from the state. The court said, "The licensing of contractors throughout the state is a matter of general and statewide concern and not a municipal affair."

Citation: Collins v. Priest, 212 Pac. (2d) 269.

Contract Price With Governmental Agencies

MODERN HIGH COURTS CONSISTENTLY hold that plumbing contractors cannot collect on agreed contract price from a state, county or municipality for installation of plumbing equipment if the indebtedness violates the state laws.

Eighty percent of the property owners in a municipality signed a petition approving an indebtedness of $50,000 for the purpose of purchasing and installing plumbing and pumping equipment.

This was done in the face of a state constitutional law prohibiting an indebtedness by municipalities of more than $20,000 for public improvements unless approved by the voters. To avoid going to the voters, the petition contained a clause that the commissioners must annually declare a value of benefits and levy a service charge to each property owner for the purpose of retiring the debt.

In resulting litigation, the higher court held that unless the contract was approved by voters at a duly called election, as provided by state law, the contractor could not recover payment for the installation work, materials and equipment.

Citation: Weaver v. State, 17 So. (2d) 91.

Liability While Work Is In Progress

RULINGS HAVE BEEN MADE which establish that if a property owner hires a plumbing contractor to perform ordinary work and does not direct how the work shall be done, the owner is not liable for injuries resulting from negligence of the contractor. However, if the work is inherently dangerous, both the owner and the contractor are liable for injuries to persons.

The crux of the matter is in the interpretation of the term, "inherently dangerous." Repairs on business property during business hours comes

(Please turn to top of page 204)

Questions and Answers

June • 1951

FOR THE PRACTICAL MAN

Noisy Service Pipe

To the Editor:

An architect has called us in to remove objectionable noise from the water supply pipe in an expensive home—cost no object. The noise appears to be located in the service or waste pipe to a bathroom located above the living room. We do not think that we can do anything with the pipe in view of the limited space available.

The floor timbers are only 8 in. The soil pipe takes up most of the 8 in. joist space. About all we can do is put 1 in. insulating covering over the hubs and put 1¼ in. on the remainder of the pipe. The copper water pipe supplying the bathroom is ¾ in. and runs about the center of the 8 in. joist space between floor and ceiling.

How to Stop Noise

What type of covering would you recommend to insulate against sound, and what would you use for a silencing device on the water pipes to remove the noise of the circulator on the domestic hot water and the operation of the pressure reducing valve on the cold water pipes?

Mass. T. A.

To the Reader:

In connection with insulating the soil and water lines between the joists, if it would be possible to get at them from above, the best solution to the problem would be to use mineral wool and pack it into all the space below, around and above the pipes. This mineral wool can be obtained from any pipe covering dealer.

In regard to your question as to silencing the sound in water lines due to circulator on domestic hot water supply and the pressure reducing valve, you do not state whether the sound is due to vibration or water hammer, or what seems to be causing the noise. If the pressure on the street side of the pressure reducing valve is rather high and is then cut down by the valve to a lower pressure, and the pipe on the house side of valve is too small, a decided singing sound may be heard. There is no other way that we know of to remedy a situation of this kind without increasing the pipe size.

Also it might be well to check all the water pipe runs in the basement to see that they all are fastened tightly to the hangers, otherwise a noise due to vibration may be transmitted throughout the entire pipe line.

Many excellent water hammer eliminators are on the market, and can be purchased through your supplier, if hammering is evident.

Installing Flashing

To the Editor:

How can I determine the degree of angle for a roof flashing which I want to make for a soil stack which comes through the roof.

The carpenter told me the roof is what he called a one-third pitch. Also, what is the required weight of the sheet lead used in making flashings?

Me. J. C. C.

To the Reader:

In roof framing the "pitch" is defined as "the slant of the rafters, represented in *inches to the foot*. A diagonal line of the 'run' and the 'rise' is the pitch."

Pitches are spoken of as ¼, ⅓, ½ etc. A full pitch is a rise of 24 in. and a run of 12 in. (See Fig. 1). When the pitch is given, as in your case, the rise can be found by the following method. ⅓ of a full pitch equals ⅓ of 24, or 8; meaning that 8 in. is the rise and 12 in. is the length of run.

Forms a Right Triangle

This set of figures now forms a right triangle. By trigonometry (simplified) we can find the degree of angle, which in this case is 33 deg or roughly 30 deg. This then is the inside roof angle. The outside roof angle between the center line of the stack and roof would be 60 deg. The roof flashing we require would then be a 60 deg flashing for a 30 deg roof.

Answering your second question about weight of the lead, the accepted standard weight of sheet lead for flashings is 4 lb lead, meaning that each sq. ft. weighs 4 lbs, and is 1/16 in. in thickness.

(Please turn to top of page 127)

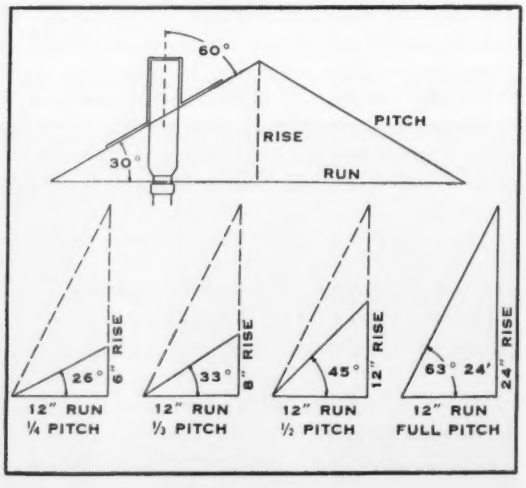


Fig. 1: This drawing shows how to figure for roof flashings when a variety of roof pitches are met. For example, a roof has a ⅓ pitch. Taking ⅓ of 24 in., which is a full pitch, gives 8, which is the rise. 12 is then the run, and the angle is 33 deg. A 30 deg roof flashing will then do. There are several excellent makes of ready-made flashings available, purchasable through your supplier or jobber. See text for full details.

Good plumber + good tools + GOOD PIPE = GOOD JOB!

7 POINTS OF UNIFORM GOODNESS IN YOUNGSTOWN STEEL PIPE

- uniform ductility
- uniform lengths
- uniform threading
- uniform weldability
- uniform wall thickness and size
- uniform strength and toughness
- uniform roundness and straightness

WHEN your die is sharp and true, you enjoy cutting threads on Youngstown pipe. That's because it's so uniformly soft, so round and uniform in size. It has the toughness and strength, too, that make your threads full and well formed, clean and sharp. The name "Youngstown," rolled into every length, tells you it's GOOD PIPE.

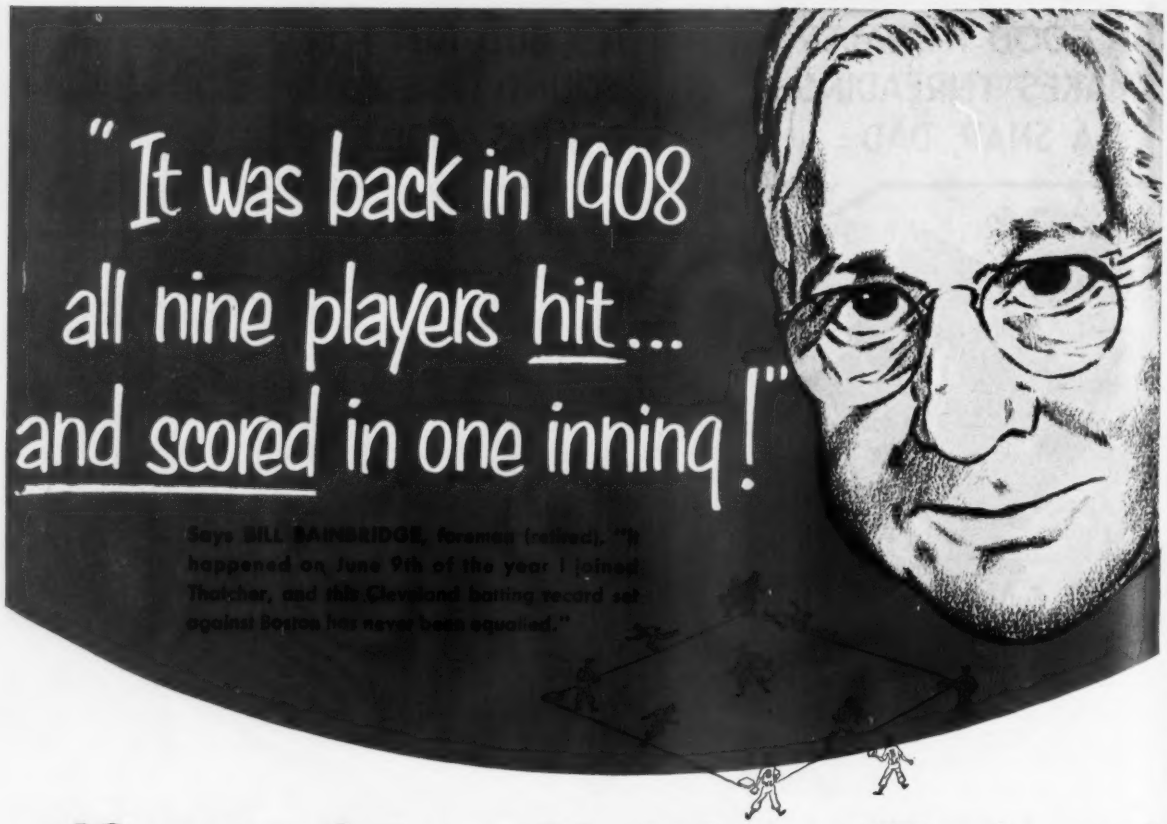
QUALITY YOUNGSTOWN SERVICE

Youngstown STEEL PIPE

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices — Youngstown 1, Ohio
Export Office-500 Fifth Avenue, New York

PIPE AND TUBULAR PRODUCTS - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - HOT AND COLD FINISHED CARBON AND ALLOY BARS - RODS - SHEETS - PLATES - CONDUIT - RAILROAD TRACK SPIKES.

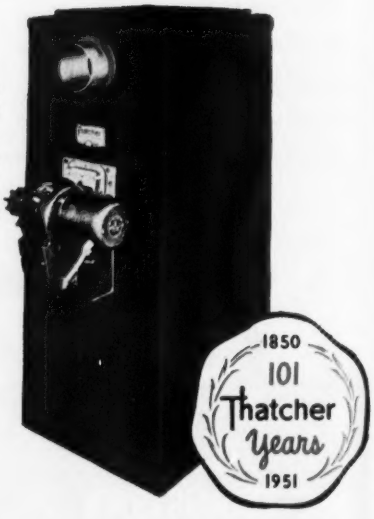

"It was back in 1908
all nine players hit...
and scored in one inning!"
Says BILL BAINBRIDGE, foreman (retired). "It happened on June 9th of the year I joined Thatcher, and this Cleveland batting record set against Boston has never been equalled."

...43 years later—Thatcher still scores! Take the modern Hi-Boy. It's great for a small "homer"!

"The Thatcher Hi-Boy is built compact, specifically designed for today's small homes... another result of our more than 100 years of productive teamwork. Based on many generations of engineering home-heating equipment, we know that to score home any winner takes the spirit of *young blood* and the experience of old-timers."

A COMPLETE WARM AIR HEATING LINE FOR OIL • GAS • COAL

Illustrated is the Thatcher 501 oil-fired Hi-Boy winter air conditioner with 70,000 B.T.U. at reg. It's completely factory assembled!



The Oldest Name in Heating

Thatcher
FURNACE COMPANY
Specialists in Heating Since 1850

Specialists in Heating since 1850

GARWOOD, N. J.

Questions and Answers

(Continued from page 124)

"Green Water"

To the Editor:

I would like your opinion on what causes the green deposit on plumbing fixtures in this locality. Opinions here vary, the most common being that the electrolysis of copper tube is the cause. However, if this is the case, why do the toilets remain free of this deposit? Is the copper oxide reacting with the alkalinity of the soap film on other fixtures? This last is what I believe to be the reason.

The N. Y. S. report analysis of this village is as follows:

Color	35 P-P-M
Odor	1 vegetable
Iron	0.3
Manganese	0.050
CO2	0.0
Fluorides	0.10
Oxygen Consumed	9.4
Chlorides	2.2
Turbidity (Hot or cold)	15 P-P-M
Ammonia free	0.740
Amonia Alb.	0.232
Nitrites	0.001
Nitrates	0.002
Hardness	8.0
Alkalinity	11.0
Ph	6.0

This water is treated with chlorine and ammonia in small amounts and is considered corrosive. Correction of these green deposits constitutes a considerable problem here, and I would like to have some data on the cause of this deposit so that I can answer the complaints of home owners. Can you suggest a cure?

N. Y. H. S. S.

To the Reader:

Copper staining and "green water" are generally associated with the use of soft waters which contain considerable dissolved carbon dioxide. Very low copper concentrations in the water—in the order of a few tenths of a part per million—suffice to cause objectionable staining of white plumbing fixtures. Staining does not necessarily imply appreciably decreased life of the pipe since the concentration required for its production corresponds to very low rates of corrosion of the copper. We agree that copper-soap formation plays an important role in the staining of plumbing fixtures; such soaps are highly colored and very insoluble.

The maintenance of valve seats and washers in a good state of repair so that drippage is eliminated is often a simple means for the alleviation of a considerable portion of the trouble with copper staining.

Elevation of the pH of the water to 7 or above is often a satisfactory means for reduction of copper staining. This is conveniently accomplished in domestic installations by passage of the water over a bed of a neutrallizing agent, such as limestone chips. Properly designed neutrallizing filters are available from a number of water conditioning equipment manufacturers. Neutrallization alone often is not entirely successful and an auxiliary inhibitor treatment is advantageous. A slowly soluble glassy phosphate has proven useful in conjunction with neutrallizers for the control of copper staining and is readily adaptable to domestic installations.

It should be stressed that the above discussion is concerned primarily with the light general type of attack upon copper which produces green staining and under more severe conditions green water. It is not applicable to the highly localized pitting and perforation type of attack which is encountered in relatively isolated cases.

John Crane, chief engineer, Micromet Division, Calgon, Inc., Pittsburgh.

More on Bubbling Septic Tank

To the Editor:

I have solved the problem outlined on page 114 of your March, 1951 issue regarding bubbling septic tanks years ago as shown in Fig. 2. I vent the fixtures and the septic tank to the roof, thus preventing odors from blowing in through windows, as so often happens when there is a vent right at the tank. This layout is fool-proof, I have been using it for 40 years.

L. E. Scovell, master plumber (retired), Columbus, Kan.

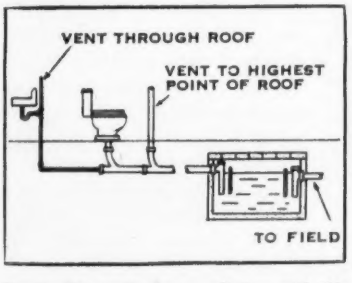


Fig. 2: Our reader has supplied us with this interesting drawing which shows his method of eliminating odors from vented septic tanks.

Baseboard Output

To the Editor:

Can you tell me what proportion of the heat from type RC baseboard is in the form of convection and what percent is in the form of radiant energy?

N. Y. F. F. F.

To the Reader:

According to one manufacturer, 53 percent of the heat produced by radiant-convection (RC) baseboard is in the form of radiant heat delivered to the inside walls, furniture and occupants, (See Fig. 3). The balance of the heat, 47 percent, is converted into a current of warm air which rises against cold wall and window areas to counteract the downdraft of cold air. This warm air then warms and mixes with the room air and with infiltrating outside air to hold an even temperature of walls and glass.

(Please turn to top of page 131)

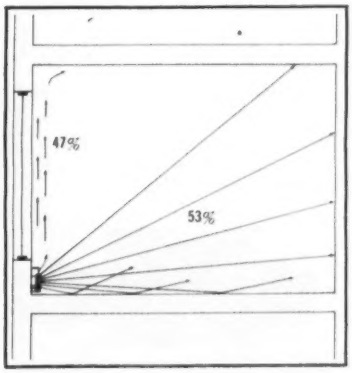


Fig. 3: Heat output in terms of convection and radiation from type RC baseboard is here shown in this drawing, courtesy of United States Radiator Corporation, Detroit.

New Products

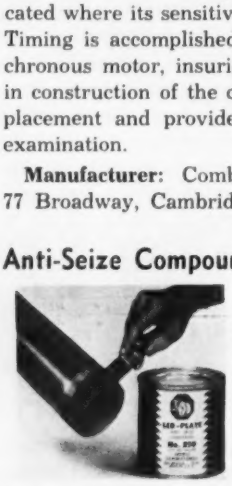
Manufacturers dealers . . .

Flame Failure Safeguard

A photoelectric flame failure safeguard which is reported to "see" all types of flames—gas, oil, and pulverized coal—and protect against the hazard of explosion was recently announced by this manufacturer. Drastically compact, it can be installed in a short length of ½ in. standard pipe located where its sensitive cell can scan the flame area. Timing is accomplished through a high torque synchronous motor, insuring accurate sequencing. Plug in construction of the complete chassis simplifies replacement and provides maximum accessibility for examination.

Manufacturer: Combustion Control Corporation, 77 Broadway, Cambridge 42, Mass.

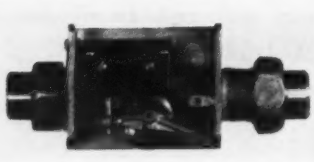
Anti-Seize Compound



The problem of seizure of pipe, bolt and stud threads and gasket faces is reportedly solved by this manufacturer's new anti-seize compound. According to test results, the compound is effective in temperatures from minus 350° to plus 2900°F. The metallic elements, of which over 70 percent is powdered lead, are held in suspension in hydrocarbons, and the materials will not dry out according to the manufacturer. No graphite is used, and the compound can be used for steam, gas, water, air, oil, ammonia and various chemical connections. Sample tubes will be sent on request.

Manufacturer: Armite Laboratories, 6603 Broad Street, Los Angeles 1.

New Flow Interlock



A new flow interlock which responds to a flow of water to open or close an electrical contact has just been announced by this manufacturer. The unit can be used as a safety device in many applications such as water heaters, welding units, food waste disposers, transformer cooling, induction heating and water cooled dynamometers. The design includes a finer differential, union fittings at both ends, a bronze piston, reduced size and weight, simpler adjustment and more wiring space, according to reports. Reports indicate the electrical rating is 10 amps at 120 or 240v a-c; maximum pressure is 125 psi. It is designed to operate for the amount of flow independent of pressure, and is intended for cold water applications only.

Manufacturer: General Electric Co., Schenectady 5, N.Y.

Multi-Use Lavatory

Concealed front overflow, recessed soap dishes, wide splash rims and a deep, full-sized bowl punched for either centerset or combination supply fittings are the new features reported for this manufacturer's new lavatory. The unit is designed for vanity, dressing table, bathroom or powder room installation, and can be used with plastic, linoleum, wood or tile. Colors available are azure blue, fern green, bermuda coral, oriental ivory, mellow red and "whiter-white." Size is 20 by 18 in.

Manufacturer: Richmond Radiator Company, 19 E. 47th Street, New York 17.

Air Measurement Device

Designed especially for heating, ventilating and air conditioning contractors and engineers, this new battery powered air velocity measuring instrument was recently introduced. Based on the hot thermopile principle, the instrument is reported to give accurate instantaneous measurement of air velocities as low as 5 fmp and as high as 4000 fmp with static pressure readings from 0 to 4 wg. Compact and light in weight, it can easily be carried from site to site.

Manufacturer: Air Devices, Inc., 17 E. 42nd St., New York 17.

announce . . . new products to build business for better tools to increase efficiency for contractors

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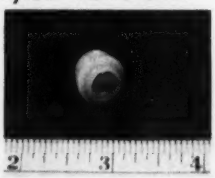
Radiant Space Heater

No smoke pipe or fuel line is reported necessary to operate this manufacturer's latest, portable, automatic, radiant type space heater for inside or outside construction work. The unit produces heat by convection and radiation at the same time, and the air is forced through the gun of the burner by a powerful, motor-driven axial blower. The gun is fitted with a Catomic Adjustable Turbulator to give perfect combustion, hence no smoke or sparks. As the air leaves the gun it is split so part of it moves over the outside of the stainless steel combustion chamber. Burning No. 2 fuel oil, the heater is rated at 200,000 Btu. Complete automatic operation is effected by means of a thermostat at the end of an extension wire; when the 110v line is plugged in, the unit is ready to operate. Overall dimensions are 4 ft by 2 ft by 3 ft high.

Manufacturer: Quiet Automatic Oil Burner Corporation, 33 Bloomfield Ave., Newark 4, N.J.

Nylon Valve Seat



A new water closet valve seat, machined from nylon rod, was recently introduced by this manufacturer. Because of nylon's resiliency and excellent resistance to both abrasion and corrosion, the seat provides a good tight fit, according to the manufacturer. The unit will not crack or chip, and nylon as a non-conductor solves the troublesome corrosion problem. In production, the turning, drilling, threading and broaching of seats from the nylon rod supplied by the manufacturer are described as "easy."

Manufacturer: Mansfield Sanitary Pottery Company, Perrysville, Ohio.

3-in-1 Offset Tool

Designed for high efficiency, this new tool is reported to make perfect offsets and bends up to 180° in. ⅜ in., ½ in. and ⅝ in. O.D., K and L copper tubing, brass, steel and other light gage tubing. Made from a special light weight metal, this hand tool is fast and simple to operate, and no vise or fixtures are required. All three sizes are combined in the same tool, and there are no loose parts.

Manufacturer: Tal Bender, Inc. Milwaukee 2.

Portable Dehumidifier

A completely portable, ⅛ hp dehumidifier, designed for a wide range of jobs from home basements to vaults and storage lofts, was recently introduced by this manufacturer. Weighing only 60 lb, it has been fitted with casters and handholds so it can be easily moved wherever needed. The reported reasons for high capacity lie in the special vertical arrangement of spiral finned evaporator coils; the constant downward drainage of water along the spiral fins maintains a damp clean coil surface and at the same time prevents an accumulation of water, thus insuring effective heat transfer. According to the manufacturer, under conditions of 80°F. and 70 percent relative humidity, the unit is capable of removing up 18 pints of water in an average space every 24 hours. The unit is enclosed in a flat-topped rectangular cabinet measuring 23½ in. high, 17½ in. long and 13½ in. wide, with a baked hammertone enamel finish.

Manufacturer: Carrier Corporation, Syracuse, N.Y.

Revolving Door Drain

Designed to minimize the problem of slush and dirty water tracked in lobbies and entrances of hotels, office buildings, stores and other buildings where revolving doors are used, this manufacturer recently announced a non-skid revolving door drain. The drain sets flush with the floor surface at both the exterior and interior openings of the revolving door enclosure, extending the full arc of the enclosure openings so moisture is wiped into the grating by the squeegee action of the rubber weather stripping at the bottom of the revolving

(Please turn to top of page 173)

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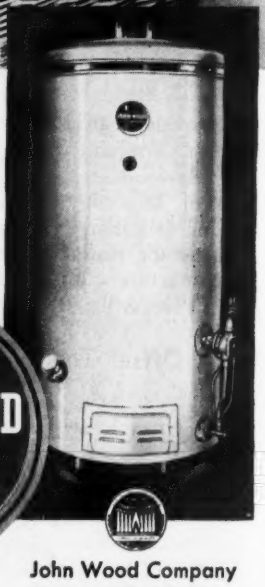

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MERION *AUTOMATIC GAS* WATER HEATERS

John Wood Company
Heater and Tank Division
Conshohocken, Pa. Chicago 9, Ill.
Toronto 6, Can.

Questions and Answers

(Continued from page 127)

Amateur Radiant Panel Heating Job

To the Editor:

The enclosed sketch, Fig. 4, of a radiant panel job, is one in which I am having trouble getting water to circulate. This job was turned over to us after being installed by the building contractor, as we are heating contractors.

Long Run Cuts Pump Efficiency

As you can see, the original installer made one continuous coil of the entire system. Being of rough pipe and having a long run, a good deal of friction resistance to flow is set up.

At this time the circulator will not pump fast enough and the boiler cuts off before it can get heat up. I am under the impression that I need a boiler feed pump on a job like this. What are your suggestions?

Fla. G. H. B.

To the Reader:

Improper circulation in a radiant panel system is generally due to air binding or insufficient circulating pump head to overcome the resistance of the long coil.

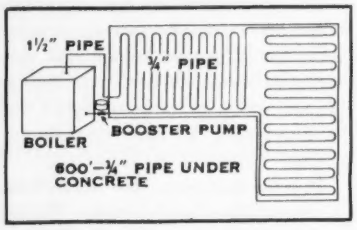
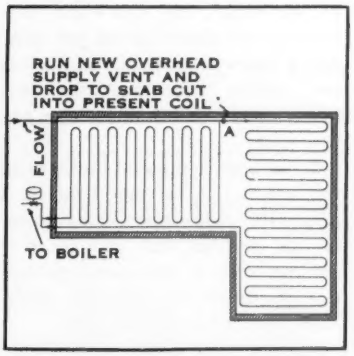
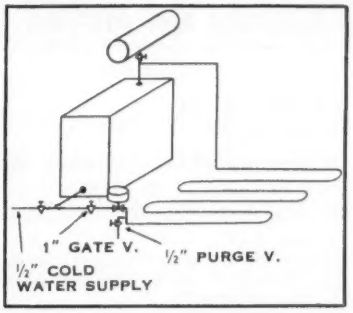


Fig. 4: This horrible example of amateur radiant panel heat design won't heat. Can you guess why? Of course, the run is too long.

Air binding can be overcome by installing and operating valves as shown in Figs. 5 and 6, using city water pressure to force the air out of the coil. The friction problem can be overcome by either installing a pump with a large enough head to overcome the existing resistance or by cutting down the length of run in the floor panel. This might be done by running an overhead supply line out to point "A" and breaking the existing 600 ft run into two 300 ft runs. If either or both of these suggestions do not overcome the difficulty perhaps you could send us more details about the job.





At left, Fig. 5: The job will work when the coils are cut so each run is 300 ft long. Then, above, the valve set-up shown in this drawing will eliminate chances of air-binding.

Deep Well Pump

To the Editor:

We are installing a deep well turbine pump in a local country club. We intend to pump to a 15,000 gal. underground storage tank. The shell of this tank is ⅜ in. and has been underground since 1931. Our problem is that an executive of the club, who is an engineer, says that there is some danger of the pump building up excess pressures and exploding, thus endangering the lives of members.

Tank Used for Storage

We now use the tank as a reservoir, with a 1½ in. overflow, but it is our intention to convert this underground tank to a pressure tank. We plan on putting a 100 psi test on it, and if no leaks show up, setting pump pressure between a range of from 30 to 50 psi.

Try as I may, I cannot convince the club member that our pump would spin or stall after reaching a pressure slightly above the head pressure of its rated capacity. It is my contention that the tank could not explode, but that instead it would rupture and lose its pressure first, regardless of what pressure we could attain.

This engineer further argues that at a 30 to 50 psi setting, we could only draw 500 gallons of water before our pump would turn on. Again I have tried to point out that the loss of pressure and volume of water delivered depends upon quantity of air in the tank.

It is my contention that if we maintain our water level at a normal height that we will draw better than 5,000 gal before our pressure drops to 50 psi.

In your opinion, is there danger of the tank exploding and which of us are most nearly correct as to the volume of water we will discharge?

Del. F. H. E.

To the Reader:

According to the information provided, your tank has been buried underground for a period of 20 years. Presumably it has not been painted inside and certainly not on the outside for all of that period. The present condition of the tank apparently is very problematical; as you yourself state, you intend to test the tank in order to find out its present condition. We also assume that an old tank of this character probably is a riveted tank, which again would reduce the working stress allowable. It is our opinion that the tank should be tested to four or five times the maximum working pressure under which it will operate in order to be safe when within the normal working pressure.

Install a Relief Valve

In the first portion of your inquiry you state definitely that the tank will operate under a pressure of 30 to 50 lb set up by the pump; however, in the latter part of your letter you talk about drawing out 5,000 gal and *then* having 50 lb psi remaining. We suggest that you place a relief valve on the pumping line set for 50 lb or 60 lb and a control valve on the water supply to the tank which would start and stop the pump between 30 lb and 50 lb pressure. This is assuming, of course, that the tank will stand 200 to 250 lb pressure safely.

(Please turn to top of page 132)

Questions and Answers

(Continued from page 131)

Chimney Caps

To the Editor:

When installing a chimney cap on a chimney 17 by 27 in., should the size of the chimney be reduced to 6 or 8 in?

N. C. J. E. H.

To the Reader:

If you are installing a chimney cap on an existing stack, we see no reason for reducing the chimney in size. If you are building a new chimney, the increased draft produced by the cap would probably allow you to reduce the size a small amount. The manufacturer of the cap should be consulted if the exact amount of reduction is required.

Fixture Units

To the Editor:

What is a fixture unit as applied to plumbing fixtures and water supply pipe sizing?

N. J. B. H. N.

To the Reader:

A fixture unit is a factor so chosen that the load-producing values of the different plumbing fixtures can be expressed approximately as multiples of that factor.

The rate of discharge of an ordinary washbasin having a normal 1¼ in. outlet, trap and waste, was found to be about 7.5 gal per minute, a figure so near to 1 cubic foot per minute that the latter was taken as the definition of *one fixture unit.*

It has been computed that a rainfall rate of 4 in. per hour is a reasonable allowance, and hence it was decided that 180 sq ft of drained area in horizontal projection should be considered as equivalent to one fixture unit.

Following is a list of the most common types of fixtures and their equivalent units:

FIXTURE	UNITS
Bath tub	2
Combination sink and laundry tray, each compartment	2
Drinking fountain	½
Floor drain	2
Laundry tray, 1 or 2 on trap	1½
Lavatory, 1 only	1
Lavatory, group of 2 on 1 trap	1½
Shower stall	3
Showers, gang, each head	3
Sink	2
Sink (slop) ordinary	2
Urinal, pedestal and wall type	2
Water closet	6

For further information, see the article on Water Supply Pipe Sizing on page 88 of the May issue and on page 102 of this issue.

Rattling Check Valve

To the Editor:

Can you tell, from the enclosed sketch (Fig. 7) why the check valve should rattle? This valve even rattles when there is no water being used on the premises—and when water is being drawn next door it wakes the occupants of the first house from a sound sleep.

N. C. G. N. B.

To the Reader:

In our opinion you are either using a check valve where none is required or you have the wrong type of check valve installed. Literally thousands of water systems are installed without a check valve on the cold water main and are giving excellent satisfaction. However, if you feel that a check valve is necessary in the location where you have installed it, we would suggest that you replace your present check valve with a ½ in. leather seated valve with the tongue set on about 22½ deg angle and see if this does not remedy the trouble. This valve is built with the tongue hanging so nearly vertical that it is closed practically all of the time when water is not being drawn in the house.

Of course there is another part to this question—it may be that your present check valve is defective and needs to be replaced. Our suggestion is that you replace the present check valve and if the noise still continues that you replace the valve with one of the 22½ deg angle type.

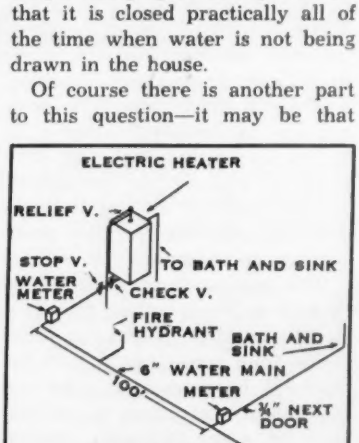


Fig. 7: The check valve in this drawing rattles so loud that it wakes up the house occupants when next-door neighbor draws water.

More on Soldering Copper Tube and Pipe

To the Editor:

After reading the Question and Answer about soldering copper tube, on page 133 of the Jan. 1951 issue, I cannot see where the question was really answered.

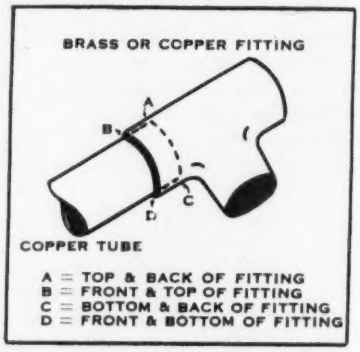


Fig. 8: Here's a reader's practical suggestions for making sure-fire soldered copper tube joints. His instructions are based on experience. See the text.

The average man has in mind, when soldering or sweating copper tube, the idea that solder will run down between the tube and fitting, instead of an understanding of the fundamentals of the heating of metals.

In my experience, too much heat is worse than not enough. Think, for example, about wiping lead joints. The apprentice must be taught first how to handle the *hot* metal—if not careful he will "burn" the lead. The pipe must be rotated after pouring the lead, a technique that comes only by practice. In short, the metal and the degree of heat applied must be understood by the perfection that comes from practice.

I find in sweating copper that if the fittings are clean (new) it is not necessary to clean them. Just apply soldering flux with a brush (an old tooth brush will do), making sure that all of the socket of the fitting is covered. Clean the copper *tube,* though, then apply flux and sweat same.

He's interested in ONLY ONE PUMP!

by J. B. Darden, Asst. Sales Manager
Water Systems Division, Goulds Pumps, Inc.

That's right, when a customer comes into your place, he's interested in just one pump — *the pump that will do his job best!* If you don't have that pump, you won't sell him — or you shouldn't. Installation of a pump that is wrong for the particular requirements only leads to a lot of grief, as I'm sure some of you have found out by this time.

The point is — you must have a pump that's right for every job, or you can't hope to satisfy every customer.

One Line is Enough

That doesn't mean that you have to go to the time and expense of doing business with every water systems manufacturer in the country. It's a lot more profitable to handle only one line — but *that line must be complete!*

It must include water systems designed for service with any imaginable water source, with any sort of power. Pressure and capacity ranges must be broad enough to cover every application. The demands of the many different kinds of irrigation — and other special requirements — must be provided for. And, of course, dependability and economy must be "engineered into" every unit in the line.

Goulds Line Complete

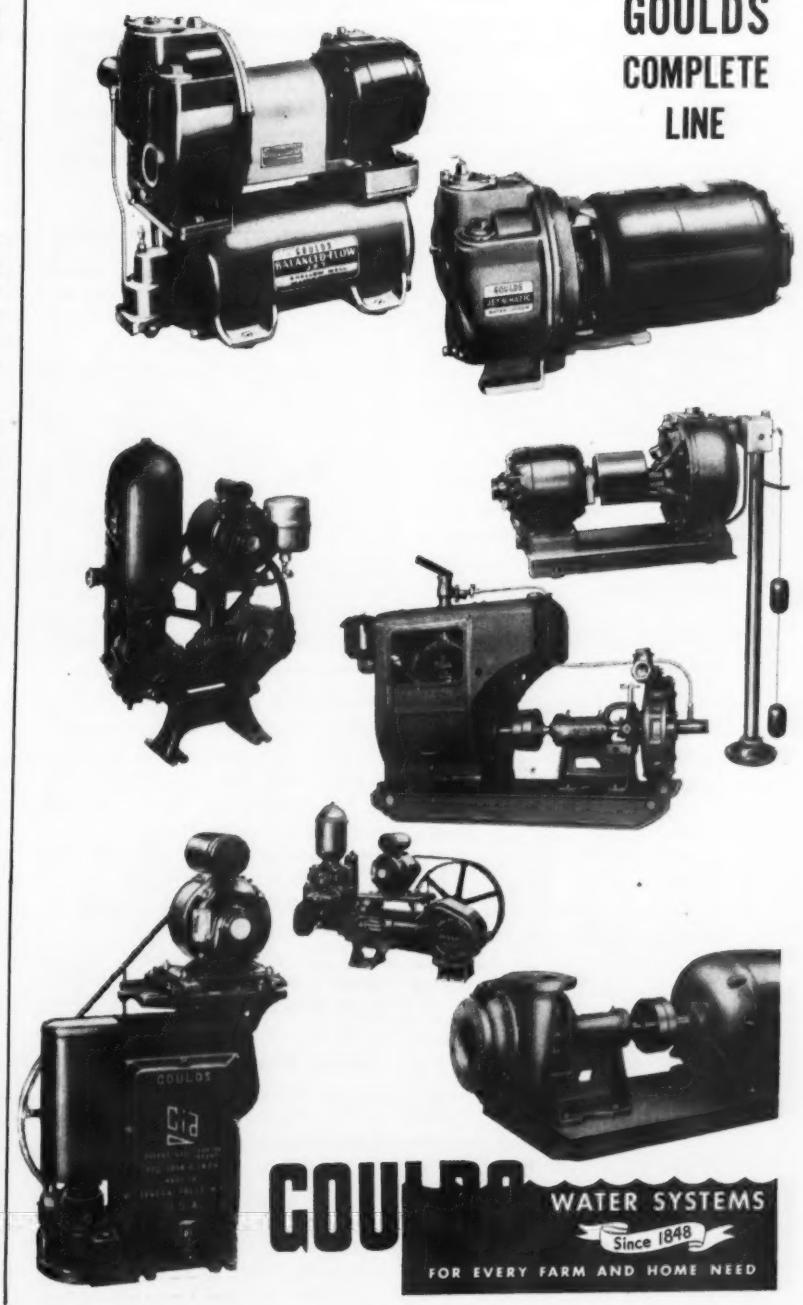
There *is* such a line available to you today. It's the Goulds line, developed to offer you a single outstanding source for all your water systems requirements. After years of study, research and development, we know that today's Goulds line is truly complete.

Doesn't it make sense to join the thousands of water systems dealers who have found that Goulds complete line does the most thorough job for them? Stock and feature the whole Goulds line—and show *every* prospect the *one pump* he wants to buy.

Literature Available

We'd be happy to send you details on how the complete Goulds line can boost *your* water systems profits. Write our Sales Promotion Department, Seneca Falls, N.Y.

A few of the many outstanding units in GOULDS COMPLETE LINE



GOULDS WATER SYSTEMS
Since 1848
FOR EVERY FARM AND HOME NEED

(Advertisement)

Questions and Answers

(Continued from page 132)

The following is the procedure I employ to sweat copper tube and fittings—and I never have leaks. This method takes very little more time than the usual way. First, apply heat at "A" (Fig. 8), carry heat toward "B" and back to "A" until solder starts melting. Drawing solder in toward "A", continue feeding solder, moving heat toward "C". The solder can be seen traveling from "B" to "D".

Apply heat from "C" toward "D" (always applying most of the heat to back of the fitting), drawing the solder from "D" toward "C". One side of the fitting should now be sweated.

Apply heat again between "A" and "B", drawing in solder on top and repeating the two steps just outlined, on the opposite side of the fitting. When these steps have been completed, apply heat between "A" and "B" and fill in the top of the sweated joint.

Now apply a little heat at point "D" and wipe off excess solder. Avoid heating the fitting any more than necessary. Do not attempt to heat any size fitting all at once. Have the proper size of torch at all times.

When un-soldering copper tube, never apply heat to all parts of the fitting and never heat more than one third of the socket at one time. (See Fig. 9 for an example.)

Apply heat between points "A" and "B" and all the way around, with an even heat. The tube should then be easy to slip out of the socket.

Edward Rausch, plumbing and heating contractor, Baltimore, Md.

To Our Readers:

The above technique for soldering copper tube is Mr. Rausch's own, and does not necessarily reflect the opinion of your editor. If any of our readers would like to add to or comment on Mr. Rausch's technique, send your letter to us.

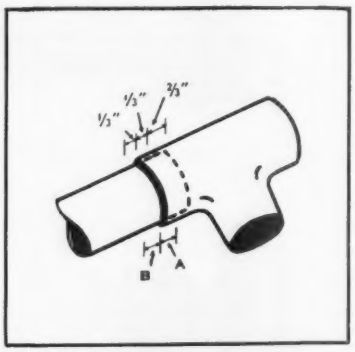


Fig. 9: Our reader cautions never to try to heat all parts of a large copper fitting all at once, but gradually as shown in drawing.

Figuring Gas Consumption

To the Editor:

The following are the gas rates in our community for 1000 Btu of natural gas:

First 400 cu ft or less.....$0.80
Next 1600 cu ft, per 100 cu ft 0.20
Next 2800 cu ft, per 100 cu ft 0.13.2
Over 4800 cu ft, per 100 cu ft 0.07.5

Assuming 16,000 cu ft of gas = 1 ton of coal, is there an easier or quicker way of finding the cost of 16,000 cu ft than the following:

First 400 cu ft $0.80
Next 1600 cu ft 3.20
Next 2800 cu ft 3.70
Next 11,200 cu ft 8.40

Total $16.10

N. Y. W. A. Q.

To the Reader:

There is no easy or quick way of finding the exact cost of gas with a sliding scale such as you show. However, if you are interested in finding your cost on any number of cubic feet in excess of 16,000 it is only necessary to multiply .075¢ by the number less 16,000 and add the product to $16.10.

For example, if you want the cost of 780,000 cubic feet of gas:

Cost = .00075 (78,300 − 16,000) + 16.10
Cost = (.00075 × 62,300) + 16.10
Cost = 46.72 + 16.10
Cost = $62.82

Water Heating Costs

To the Editor:

Can you tell us what the cost of heating one gallon of domestic water by electricity at 3 cents per kilowatt hour would be? Take into consideration a 100 deg change in temperature every four hours, with incoming water at 40 deg.

If there is a chart printed for this purpose, we would appreciate receiving one.

N. Y. T. B.

To the Reader:

We do not know of any chart giving costs of heating water electrically. The following figures will give you the cost of heating one gallon of water through a 100 deg rise, based on electricity at three cents per kilowatt hour and a 100 percent efficient water heater.

1 gallon = 8.35 lbs.
8.35 × 100 = 835 Btu to heat 1 gal 100 deg
1 kilowatt = 3413 Btu/hr.

835 Btu
3413 Btu/hr./kw.
× .03 Dollars/kilowatt hour
= $.0072

Or in round numbers it costs three-fourths of a cent per gallon. Substituting in the above formula will give the cost of heating any number of gallons through any temperature change with various power costs.

Valuable Suggestions

To Our Readers:

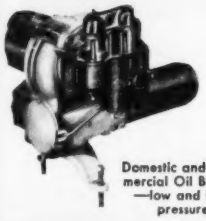
The Questions and Answers department exists solely to help you make more money by providing fast solutions to problems that tie up your jobs. To help us help you, be sure to make a rough pencil sketch of the job involved. The old saying "A single picture is worth a thousand words" holds true here more than any place else.

With such a sketch our engineers can visualize your problem, and often make much more specific suggestions, such as re-piping, adding or removing a valve, etc. On the contrary, without an accurate sketch, we cannot accurately visualize your problem, with the result that you may get at best an educated guess for an answer.

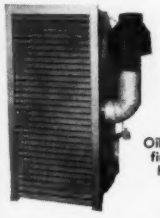
You can also get wide-spread industry recognition for your brainstorms by sending us a rough write-up, accompanied by suitable pencil sketches, of your solutions to problems that appear in the Questions and Answers Department or to those you have met on-the-job. Send your practical ideas on methods of piping, kinks, hints and short-cuts on plumbing, heating and air conditioning, to the Questions and Answers editor.

Oil, gas and coal-fired Furnaces

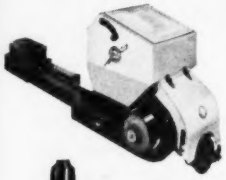
Oil-fired Boilers



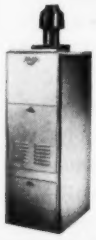
Domestic and Commercial Oil Burners —low and high pressure



Oil and gas-fired Wall Furnaces



Domestic, commercial and industrial Stokers



Gas-fired Furnaces

Gas Conversion Burners

This Sales Record can mean

Bigger Profits for You!

A WINKLER DEALERSHIP OFFERS YOU AN OPPORTUNITY TO SHARE IN THE METEORIC RISE OF WINKLER AUTOMATIC HEATING EQUIPMENT

This Winkler chart of sales growth is not just a dry statistic . . . *it is a reliable guide for dealers who want to sell heating equipment with outstanding profit possibilities!*

Winkler growth is the result of *more effective dealer selling methods* based on *quality merchandise!* Winkler Heating Products are alive with design and construction features, offering *extra values* which can be convincingly demonstrated. A large proportion of Winkler sales are due to recommendations by satisfied users . . . surely the ultimate proof of merit.

Winkler's unvarying objective is that *Winkler dealers must make money!* The Winkler Training Institute, for example, was established to give dealers and their personnel thorough instruction in every phase of successful selling, installing and servicing. In addition, the Winkler Two-for-One Plan provides dealers with the means for aggressive local sales promotion.

Write today for information—join up with an organization which believes that its own future depends upon the prosperity of its dealers.

NOTE: Winkler sales the first 2 months of 1951 are 109% over the same period in 1950!

The Winkler Training Institute is now housed in a new building, designed and equipped especially for the purpose. Enrollment is free to all Winkler dealers and their personnel. Courses include sales procedures proved most effective—product demonstrations—business promotion methods. Trainees are able to start earning immediately! Hundreds of dealers have attended the Winkler Institute—declare it amazingly successful in stepping-up sales.

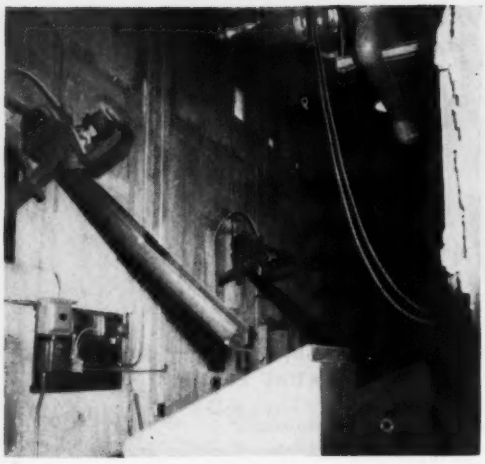
Due to war conditions and curtailment of business, the years 1942-46 do not reflect normal growth in heating equipment sales. During this period, Winkler plants were extensively engaged in the production of war materials, winning five Navy "E" awards.

Ask about the Winkler Free Training Institute

WINKLER

AUTOMATIC HEATING EQUIPMENT

U. S. MACHINE CORPORATION
Dept. F-61,
Lebanon, Indiana



Shown above are the feeders extending out of the coal storage area over two of the system's automatic stokers.

The above illustration shows the placement of the plant's three boilers. Space has been left for another boiler to be added later.

Plans and Layouts for

(Part Two of a Series)

MODERN BOILER ROOMS

Complicated by the projected addition of a large auditorium, planning for this boiler room for a school had to be flexible enough to facilitate the incorporation of another boiler

ESSENTIALLY, the basic problem in boiler room planning and layout is that of achieving maximum utilization of available space while assuring the greatest efficiency of operation. As a rule, the space, its quantity and its shape, is already determined when the heating contractor takes over. Architectural demands must first be satisfied, and the contractor must then fit the necessary heating plant in a predetermined area.

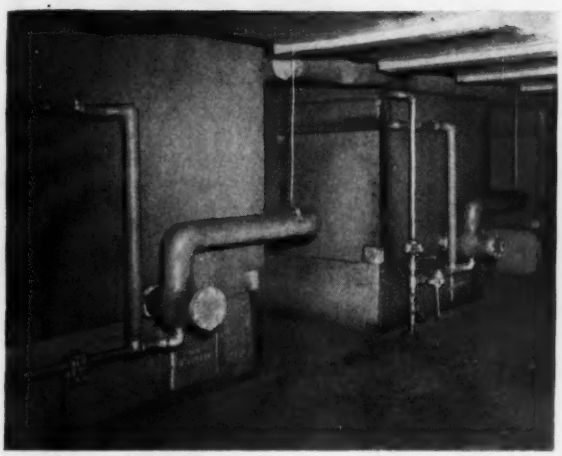
In the boiler room under consideration in this article (located in the Hinsdale High School, Hinsdale, Ill.) an additional problem was involved in that ample space had to be left for another boiler which was to be added later. A rather large auditorium is projected, and it was therefore necessary for this to be taken into consideration in planning the boiler room.

The school is built in the shape of an L, and it was determined that three boilers would be adequate until the auditorium was erected. Cost was also of utmost importance, and every effort was made to keep the piping and control system as simple as possible. This factor caused even more attention than usual to be focused on the placement of each item of equipment. Their arrangement must be such that efficient control could be achieved at a minimum cost.

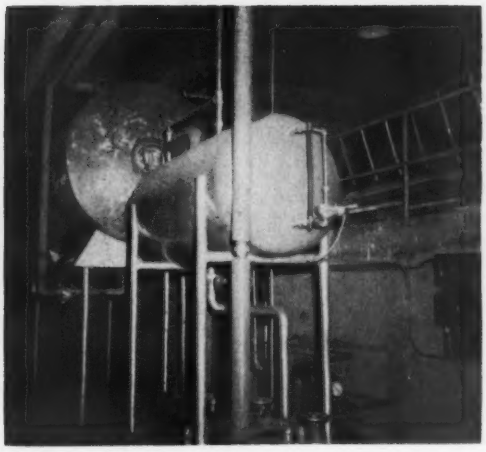
The location of the coal storage bins (see drawing at right) largely determined the placement of the three boilers. Automatic stokers connected to an efficient endless belt system were utilized. Space was left for the fourth boiler at the opposite end of the boiler room from the ash storage pits. A portion of the wall was left in a state that would facilitate opening it so that the boiler could be brought into the room when required.

Care was taken so that, whenever possible, valves which would require frequent adjustment were placed either within reach of the floor or, if overhead, as close together as possible so that only one trip up on a ladder would do the job.

The problem of keeping the boiler room clean was also taken into consideration. Floor space, wherever possible, was kept open, and all piping



This view shows the backs of the three boilers. In this plant, heavy emphasis was placed on the simplicity of piping and control.



Shown above are the system's two hot water tanks. Pumping units are installed beneath small tank in foreground.

was placed so that, if near the floor, cleaning under it would give no trouble. (For there is a natural tendency to avoid cleaning those areas that are not readily accessible.)

Banks of controls—especially the most essential ones—were placed so that access to them was not impeded by piping or other equipment. Also, the boiler room was lighted so that the most frequented work areas would obtain the maximum illumination.

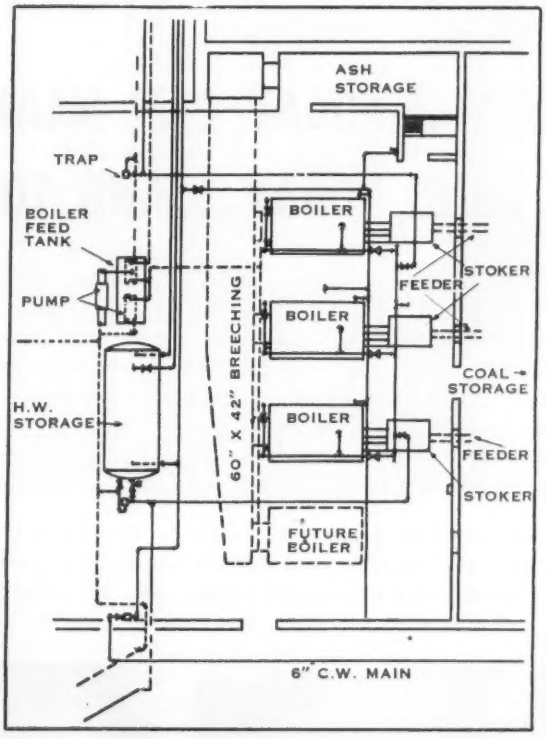
Placed along the wall opposite the back of the boilers (see drawing), the hot water tanks were located off the floor with pipes and pumping equipment concentrated in one area beneath.

In all areas in which electrical lines were concentrated, a wall-fixed fire extinguisher of the chemical type was placed nearby. Also, near each of the two main entrances to the boiler room such an extinguisher was located.

The boilers are hooked-up so that any or all of them can operate at the same time with a minimum of effort on the engineer's part. As a rule, at least one of the boilers is held in reserve—the other two supplying the system. However, in extremely cold weather, all three can be brought in, and with a very simple control system the water level is kept equal in the boilers.

Completely automatic, the heating plant requires very little attention while in operation. Fuel storage space is adequate and thus a minimum number of deliveries will carry the plant through even a severe winter. Because the engineer must attend to the entire building, it is important that his duties in the boiler room be kept as light as possible.

Next month's article will deal with the planning of a boiler room for residential application.



Reproduced above is a modified blueprint of the boiler room in the Hinsdale High School, Hinsdale, Illinois. Note the area (shown in dotted lines) near the bottom of the drawing which is reserved for another boiler. Gas and some other lines for purposes of simplification, have been excluded from this drawing.

CREDITS

Architects: Childs and Smith, Chicago
Engineering: S. R. Lewis, Chicago
Heating Contractor: William A. Pope Company, Chicago

THIS MONTH'S MERCHANDISING IDEA

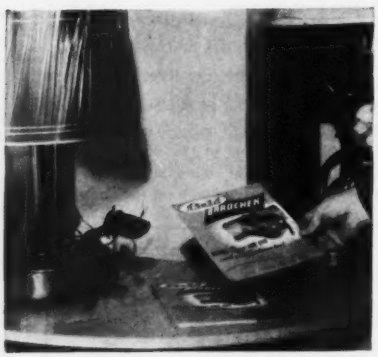
With fuel costs high, the fuel savings offered by a Field Draft Control have a strong appeal both to oil and coal users.

SERVICE TODAY CAN MEAN SALES TODAY...AND TOMORROW

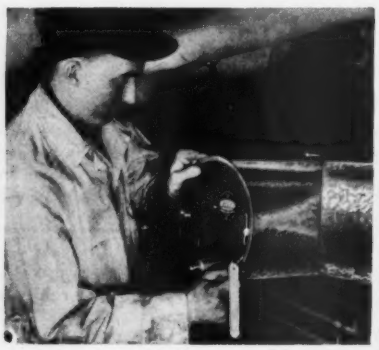
With fewer new furnaces available to sell in 1951, Field Draft Controls will offer both dealers and home-makers special advantages: For the dealer they mean a profitable sale with a large volume potential. For the home-maker a Field Draft Control means important fuel savings, longer furnace life.

For hand-fired furnaces which must be kept in operation, the Field Barochek is a "must". It is a combination draft control and check damper that reduces furnace tending, cuts the coal bill, assures more even heat and lengthens furnace life by preventing overheating. Take a Barochek along on every hand-fired call. The draft control on oil-fired furnaces, too, must be replaced periodically.

Draft Control sales today are good insurance for heating plant sales tomorrow.



Field Control literature prominently displayed brings extra leads, extra sales for draft controls.



Installing a Field Draft Control manufactured by Field Control Division, Mendota, Illinois.

field *means finest in* **DRAFT CONTROLS**

. . . . And There's A Field Control For Every Need!

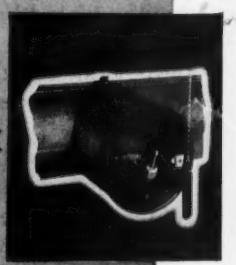
field TYPE M

First and finest for all types of automatic heating equipment.

field TYPE R

First and finest for all types of space heaters and ranges.

field BAROCHEK



First and finest for hand-fired furnaces and boilers, a combination check damper and barometric draft control.

field FUEL SAVING SYSTEM

A newer, finer, more trouble-free damper-motor set with automatic spring return, built-in limit control, "stoke-switch", and booster fan switch.

WRITE for proof of why Field is First and Finest — first choice for the finest in heating equipment.

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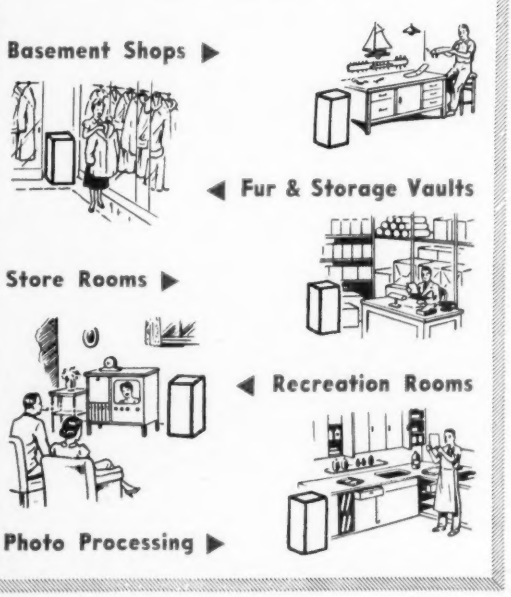
AUTOMATIC HEAT *and* AIR CONDITIONING *Section*

The Case for...

DEHUMIDIFIERS

Here are some practical tips on the nature and extent of the present market for residential dehumidifiers

SELL DEHUMIDIFIERS TO THESE MARKETS



DURING the past five years the American homemaker has tended more and more to incorporate into his home many of those modern improvements in air tempering which, for nearly two decades, have been common features in offices, stores and factories. In the past, the homemaker's reluctance to add these comfort-building items to his home has been due in part to their excessive cost. Now, however, such is not the case, and domestic engineering dealers are presented with a growing market for all kinds of air tempering equipment.

Typical of the modern air-control items now available at reasonable prices for residential application is the dehumidifier. Available in all types, this mobile unit has become a must item for those people who demand the ultimate in humidity

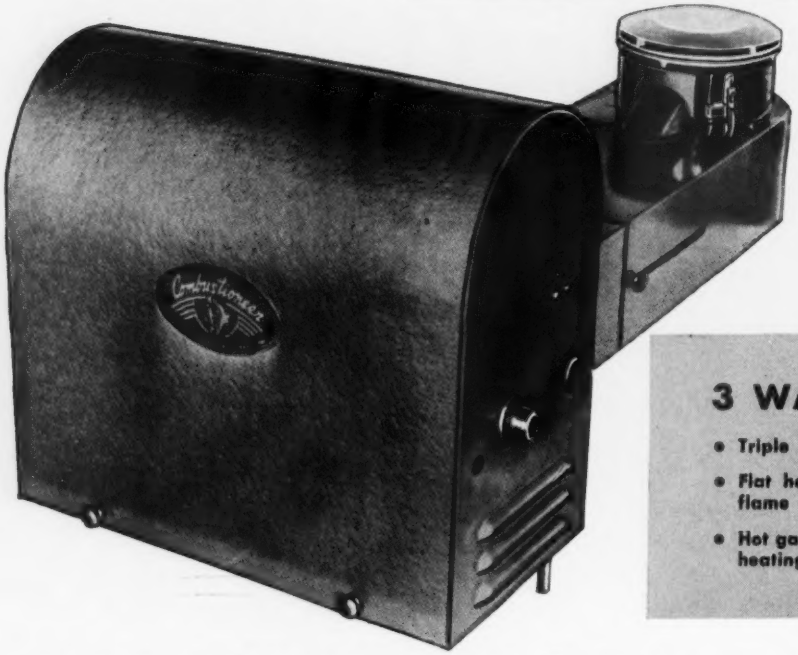
(Please turn to top of page 222)

FOR LARGER PROFITS SELL THE

NEW *Combustioneer* ®

GAS CONVERSION BURNER

...with the exclusive Triple-Mix burner head



3 WAYS BETTER

- Triple mixing of gas and air
- Flat horizontal air suspended flame
- Hot gases "scrub" all exposed heating surfaces

The *Combustioneer* TRIPLE-MIX mono-port burner has no refractory to crack or burn out. Engineered for highest gas firing efficiency, ***Combustioneer*** can be elongated or shortened permitting installation in most boilers and furnaces. All operating controls, including primary and secondary air adjustments, can be made from within the sturdy aereated *20 gauge* metallic Blue enamel finished cabinet. AGA listed for use with natural, manufactured, mixed, LP gas and LP gas-air mixtures.

Exclusive TRIPLE-MIX Burner Head delivers an "air suspended" primary air-gas mixture "sandwiched" between upper and lower layers of secondary air. The flame spreads horizontally to the lowest permissible exposed heating surface. At this point, the usable hot gases start scrubbing upward against the interior walls of the furnace or boiler for maximum heat extraction.

The **TRIPLE-MIX** burner head increases overall burner efficiency since no heat wasting gases go upward from the center of the firepot.

BTU controller nozzle regulates amount of gas entering combustion chamber. Exclusive *sliding air cone*, mounted on the nozzle, assures quiet, high efficiency primary air-gas mixing at venturi entrance.

TRIPLE-MIX *Combustioneer* conversion gas burner offers numerous other exclusive features, "*Many firsts,*" that sell at a price that means profits to you!

When you sell Combustioneer products, you offer unmatched quality and dependability at a competitive price.

Excellent dealer franchises are still available. Write today for full information, use the coupon.

WE HAVE OPENINGS FOR TOP-NOTCH TERRITORY SALES MANAGERS!

Combustioneer **DIVISION**
The Steel Products Engineering Co.
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Manufacturers of Better Heating Equipment Since 1928
Combustioneer **GAS BURNERS, HIGH AND LOW PRESSURE OIL BURNERS, STOKERS, COAL-GAS-OIL FURNACES, AND HUMIDIFIERS**

CLIP AND MAIL TODAY!

Combustioneer **DIVISION**
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1252 West Columbia Street, Springfield, Ohio

Please send me information about a ***Combustioneer*** franchise.

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YOU CAN DO A *BETTER* JOB WITH

Hydro-Flo FLO-CONTROL VALVES

THE ONLY VALVES WITH THIS EASY-TO-CLEAN FEATURE

1 Unscrew top cap.

2 Lift out mechanism.

3 Wipe off the seat.

4 Replace the cap.

B&G Hydro-Flo Products protect your most valuable asset — customer satisfaction.

B & G Booster

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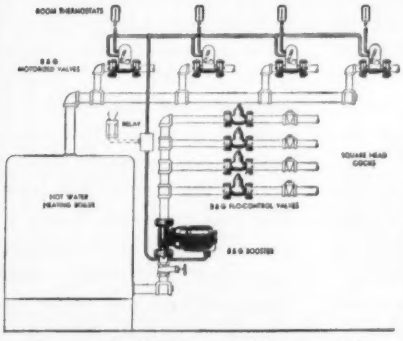
B & G Relief Valve (ASME Stamped)

B & G Deluxe Heater Tankless



Four zone forced hot water heating system with circulation controlled by B & G Motorized Valves and B & G Flo-Control Valves. The B & G Booster starts simultaneously with the opening of any Motorized Valve.

● The quick cleaning design of B & G Flo-Control Valves permits easy removal of dirt which might cause faulty operation—turns a tough job into a simple matter. *No pipe connections to break . . .* merely unscrewing the top cap gives access to the interior of the valve.

B & G Flo-Control Valves give you a choice of either angle or straight patterns, enabling you to meet any piping problem the most convenient way. These valves can be quickly adjusted for automatic or gravity operation by turning the wing nut at the top.

See the B&G catalog for complete size and capacity information. If you haven't a copy, write today.

BELL & GOSSETT
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Dept. CB-1, Morton Grove, Illinois

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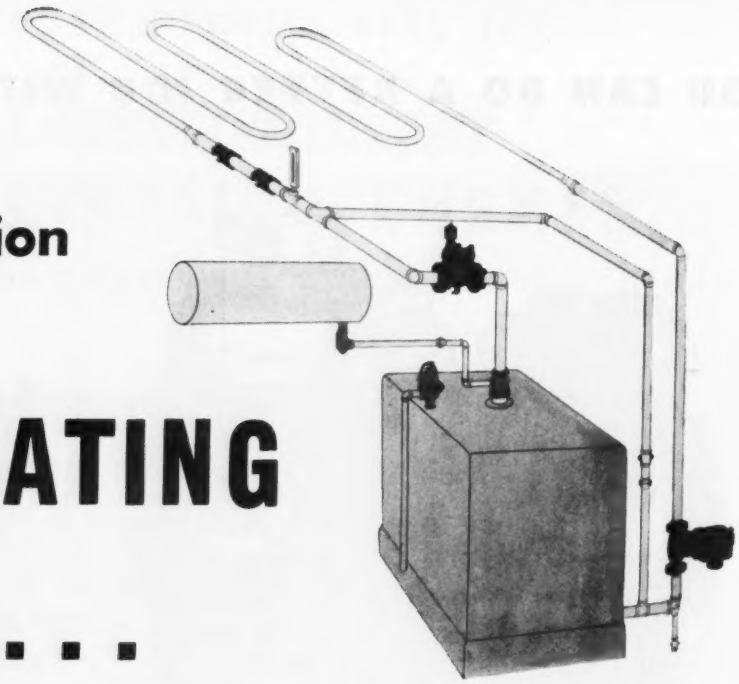
FORCED HOT WATER HEATING EQUIPMENT — HEAT EXCHANGERS — WATER HEATERS — PUMPS — REFRIGERATION EQUIPMENT

Selection Application and Installation of . . .

CIRCULATING PUMPS . . .



IN THE SEARCH for indoor comfort, we have been constantly confronted with the problem of temperature control. Today, however, the development of forced hot water heating has made possible a very satisfactory solution. In perfecting this type of automatically controlled system, the centrifugal pump has played one of the leading parts.

It is not the purpose of this article to describe the development of the centrifugal pump since its introduction nor even its development within our industry. As far as the use of centrifugal pumps within our industry is concerned, it is well known that the introduction of the forced circulation hot water heating system has brought about greater economies and affords better control than ever before achieved.

Before we can discuss the circulating pump as used in heating work we must understand several terms which are used in the selection and sizing of these units. The first of these is "pressure drop." "Pressure drop" is a term which expresses the fact that power is consumed in moving liquids through pipes, heating units, fittings, etc. Or expressed in another way, pressure drop is the amount of pressure lost between any two points in a system. For example, if the city water pressure at the inlet of a tankless type copper coil indirect water heater is 40 psi and at the outlet 35 psi, it is evident that 5 psi pressure drop has occurred through the heater. If we look on the term pressure drop as an expression of power we can say that it has taken 5 psi pressure to circulate a certain quantity of water through this coil.

Pressure drop is caused by the friction created between the inner walls of the conveyor and the moving liquid. In a horizontal pipe in which there is no flow the pressure is equal at all points. The moment flow starts, friction is set up which increases in direct proportion to velocity of flow.

For all practical purposes pressure drop may be considered to vary as the square of the ratio of the velocities. In the following example let us think of velocity in a pipe in terms of gallons per minute flow. Assume that we have a pipe through which there is a flow of 3 gallons per minute. Let us further state that when 3 gallons a minute is circulated through this pipe of certain size and length, the pressure drop is 10 psi. Now let us double the flow in this pipe from 3 gpm to 6 gpm. The ratio between 6 and 3 is 2. This means that the velocity is twice as great and, according to the statement previously made, the pressure drop then will be equal to the square of the ratio of the velocities or four times as much. So if the flow is doubled from 3 gpm to 6 gpm the pressure drop then will have increased from 10 psi to 40 psi, because of the simple mathematical relationship.

It is not difficult to see, therefore, that in designing hot water space heating systems pressure drop must be taken into consideration. Enough power must be available to overcome the effects of pressure drop before any desired result can be obtained. This means that the power consumption

or pressure drop of each component part of a system must be known and a source of sufficient power provided. In forced hot water heating systems this power is provided by the pump.

The next important term that we must consider in the designing of forced hot water heating systems is the *measurement* of pressure drop. Boilers, radiators, unit heaters, convectors, blast coils, pipe and fittings all offer resistance to the flow of water, and the amount of water that flows through each is proportional to the resistance offered. Since the amount of heat delivered to the various units depends upon the amount of water passing through the units it is easy to see that excessive friction in any one unit may prevent it from delivering its rated capacity.

Pump Capacity Rating Data

Manufacturers who publish pressure drop information on their equipment express the data either in lbs. per square inch or in feet of water. These figures are easily interchangeable as follows. 1 lb. per sq. in. equals 2.3 ft of water, or 1 ft of water equals .43 lbs. per sq in.

All circulating pumps are sized according to the number of gallons a minute they will deliver against a certain head pressure. Head pressure as used in designating the capacity of a circulating pump is merely another way of expressing pressure drop. The maximum head of a pump—usually expressed in feet of water—is actually the maximum pressure drop against which the pump can induce a flow of liquid.

Head pressure should not be confused with static pressure as they have no relationship. Static pressure is created by the weight of water in a system and is equal to .43 lbs. per square inch per foot of height above the gauge. For example, if the highest radiator is 20 feet above the gauge in the boiler, the static pressure at the gauge will be 20 x .43, equal 8.6 lbs. per sq in.

Static Pressure Effect

At various elevations above the gage, the static pressure becomes correspondingly less. At 10 ft, it is 4.3 lbs. per sq in. and at the top radiator located 20 ft above the boiler, there is no pressure.

Static pressure has no effect on pump capacity. If you will consider a closed hot water heating system as being an upright loop of water confined in a pipe, the static pressure in one of the vertical pipes of the loop is identical with the pressure at the same level in the opposite vertical pipe.

The static pressure at the point where the pump is installed is, therefore, exactly equalized by the pressure at the same level on the opposite side of the loop. Hence, the capacity of the pump is limited only by the friction in the pipes. This friction value is called the head pressure.

(Please turn to top of page 208)

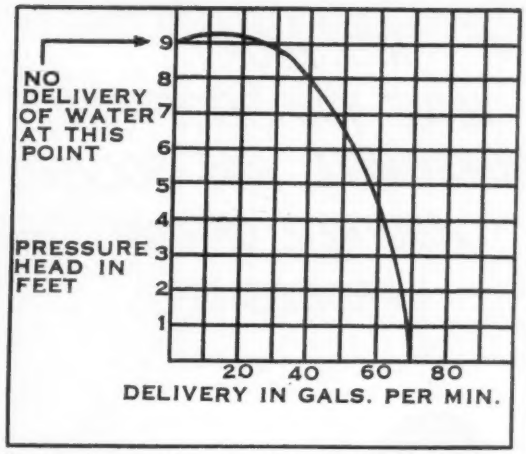


Chart 1: Here is shown the relationship between head pressure and the amount of water delivered by the pump. As head pressure increases, the delivery decreases.

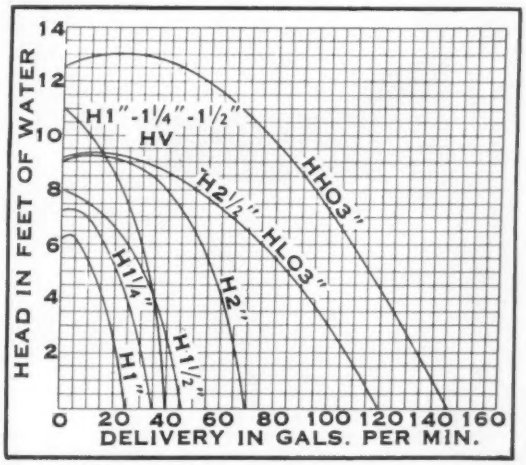
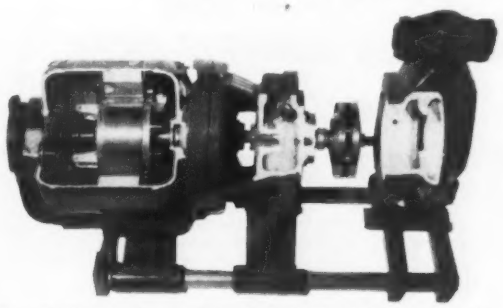


Chart 2: This chart shows booster pump capacity chart for a typical pump series. It tells delivery of gpm at a given head of water. The letters on each line denote pump types.



This "balloon" photo of a typical circulating pump shows the working parts. From left to right, the motor, shaft to pump, shaft joint, pump shaft, pump impeller and pump house.

This article is based on a lecture given by Mr. Frank Gall, sales engineer for the Bell & Gossett Company, of Morton Grove, Ill., at the 4th I-B-R short course on heating at the University of Illinois, Urbana, Ill.

HEY, LOOK! HAVE YOU SEEN HOW HONEYWELL HAS SOLVED ANOTHER OF OUR PROBLEMS ?
SURE! AND THIS NEW VALVE IS GREAT- I'VE BEEN TESTING IT. LISTEN TO THE LETTER I JUST WROTE HONEYWELL!
"We want to compliment you and your firm on the new V4001 delayed Solenoid valve because it is the answer to my dreams. If I had made it up myself, I could not have incorporated any more features in it than you have done! It's a honey! We are enclosing an order for 200 of these and we want you to send us 25, 50 or 100 or the whole order as soon as you can!"*

From one of many enthusiastic letters Honeywell has received from manufacturers of oil heating equipment. We'll be glad to show you the complete file.

Circulating Pump Sizing

(Continued from bottom of page 143)

Figure 1 shows a typical circulating pump capacity curve. At the "no delivery" point on the curve, the power of the pump is exactly equalled by the friction or pressure drop opposed to it. Since a drop in pressure between two points is necessary before flow can occur, the pump delivers no water.

If the pressure drop is lessened by eliminating some of the friction in the system, the pump begins to deliver water. For example, at six foot of head pressure on the chart, the pump delivers 52 gpm. It is clear that the lower the head pressure (or pressure drop), the greater will be the water delivery.

Pressure drop is, therefore, one of the major factors in designing a forced circulation hot water heating system. The friction or pressure drop in the system is directly related to the size of the piping used and is accordingly under the control of the designer.

Let us consider the power used by a circulating pump in pumping water along the curve just illustrated. At the high point of the curve where the pressure drop in a system is high, the delivery is low. Assume that the delivery at this point is 10 gpm. We know that one gallon of water weighs approximately 8 pounds and consequently the pump has to move 10 times 8 or 80 lbs. of water. Now, if the pressure drop in a system is lessened so that the pump will be pumping a greater quantity of water, this weight is correspondingly increased. For example, let us say that the pressure drop has been reduced to only 4 ft, wherein the pump will deliver 60 gpm or 480 lbs. Obviously it takes a good deal more power to push or pump 480 lbs. of water than it did 80 lbs. The circulators in use today have built within them a safety factor wherein the motor size is capable of handling the power requirement at any point on the operating curve of the circulating pump. Motor sizes will consequently vary with capacities of the pumps.

Velocity Should Not Exceed 4 Feet

In using circulating pumps for heating system work, an allowable velocity has been established, beyond which it is not considered safe practice to go. The American Society of Heating and Ventilating Engineers say that this velocity should not exceed 4 feet per second in the piping of any heating system. If high velocities exist, unnecessary erosion occurs as well as noise, which is most undesirable.

You may have heard the story about the old lady who went to a shoe store and when the salesman asked her her size she said "My size is six but

(Please turn to top of page 208)

ANNOUNCING THE NEW HONEYWELL DELAYED-OPENING OIL VALVE

CUTS OUT MANY OF YOUR NO-PROFIT SERVICE CALLS

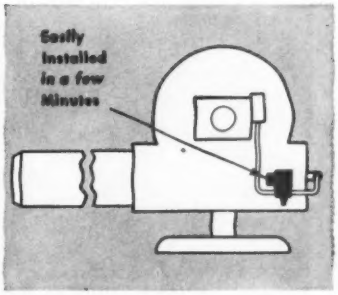
BECAUSE IT GIVES A CLEAN START, A CLEAN STOP EVERY TIME!

Here's great news — a valve that eliminates "lazy" and smoky starts and stops — prevents excessive carbon coating on burner nozzle and electrodes — reduces carbon accumulation within heat exchanger — reduces possibility of start-stop oil odors.

Here's how it works: When the room thermostat starts the burner, this valve delivers oil *only* after the burner motor and the ignition have been operating for several seconds. This delayed-opening feature provides the normal operating fuel-air ratio at the time combustion occurs.

And it allows the electrodes to clean themselves before the fuel is supplied to the oil burner. Moreover, this remarkable new valve closes instantly for a clean cut-off when the circuit to the burner motor is broken.

How much money will it save YOU — by reducing no-profit service calls? *Plenty,* we're sure you'll agree. And it's bound to *make* you plenty of money, too — because it will be mighty easy to sell for replacement. So why not get all the facts about this new Honeywell valve right away? Just fill out and mail coupon below — *today!*



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INSTALLATION TECHNIQUES FOR . . .

Pipe and Boiler Insulation

Here are valuable tips on the installation of mineral wool insulation on boilers, pipe, tanks, and furnaces

★ **Part Two of a Series** ★

IN THIS SECOND article in series on insulation techniques for boiler and pipe we will take up the use of mineral wool insulation. This type of insulation can be applied to pipe, tanks, boilers and any surface to provide effective insulation against heat loss, moisture on cold lines and for refrigeration pipe and equipment.

A typical outdoor application, and one not uncommon to this field, is the job pictured in Fig. 1 below. Here the contractor was called in to insulate a large, cylindrical vessel. In the photo, the tank, which will operate at a temperature of 270 deg, is being insulated with 1½ in. mineral wool blankets, in 24 by 48 in. sections, covered with expanded metal lath on one side and wire netting on the other.

From bottom to top in the photo, the four steps for insulating this tank are:

Step one: Mineral wool blankets, metal lath covering on the outside, are tightly butted together and secured to the tank by 1 in. galvanized iron bands encircling the tank on 9 in. centers.

Step two: A single ¾ in. layer of insulating cement is then trowelled into the metal lath covering.

Step three: A 1 in. mesh wire netting is stretched over the dry cement.

Step four: A coat of asphalt mastic, ⅛ in. thick when dry, is trowelled into the wire netting and smoothly surfaced to finish the tank insulation. The insulating materials and steps illustrated are designed to maintain the temperature of the tank contents under all weather conditions with minimum maintenance and repair.

Another interesting application of mineral wool insulation is shown in Fig. 2 below, where coal is kept flowing, without interruption, to boilers in below zero weather. Here the outlet tip of a 120 ton roof-top hopper is steam heated and insulated to prevent freezing ice and snow from slowing down or stopping

(Please turn to top of page 149)

Material and illustrations for this article were supplied by Industrial Mineral Wool Institute, New York.

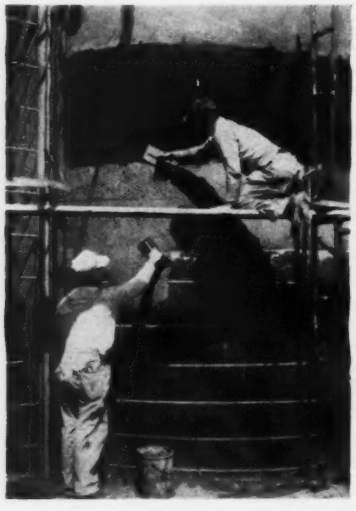

Fig. 1: Photo shows application of mineral wool insulation to large, cylindrical vessels. For full details, see the text above.

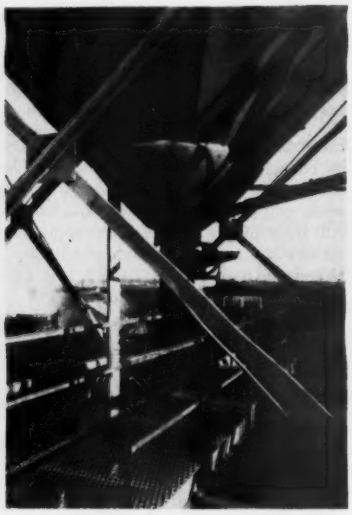

Fig. 2: Here mineral wool insulation is used to hold steam heat in hopper tip to keep coal flowing during sub-zero weather to boiler.

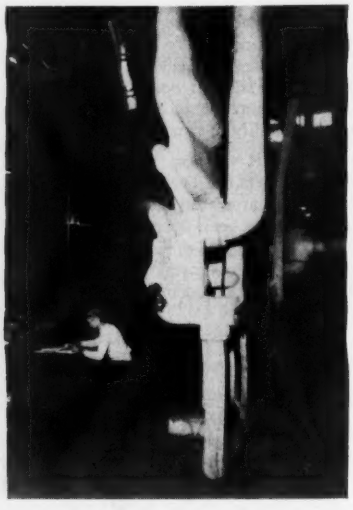

Fig. 3: A cost-saver is this technique of insulating a batch of steam lines as one unit, instead of doing each pipe individually.

Bryant Model 304 Gas Forced-Air Vertical Furnace. 6 sizes, inputs from 45,000 to 145,000 Btu per hour, A.G.A. approved for all gases. Features Bryant *Hevigage* 12-gauge steel heat exchanger and Bryant *Push-Button* Ignition (city gases only).

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They provide the kind of fully automatic, trouble-free operation that pays off in economy and user satisfaction. The proof is in *thousands* of single-family dwellings and in *thousands* of family units of multi-family housing which have Bryant *Personalized Heating* installations.

These slim, efficient Bryant Gas Forced-Air Vertical Furnaces will *fit* any new home or replacement heating need. Sell them to help *ease the squeeze* . . . to provide more space for living. Get full details from the Bryant Distributor nearest you or write direct. Bryant Heater Division, Dept. 185, Affiliated Gas Equipment, Inc., 17825 St. Clair Avenue, Cleveland 10, Ohio.

Let the pup be furnace man ...and water boy too!

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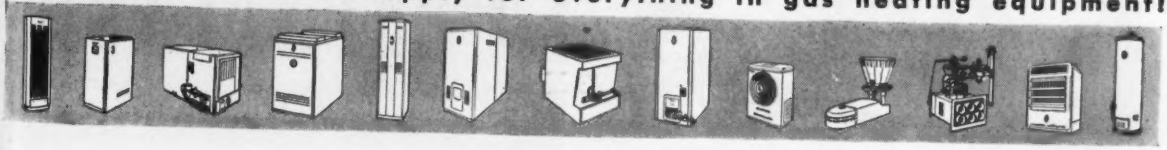
Your *single source* of supply for everything in gas heating equipment!



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April 17, 1951
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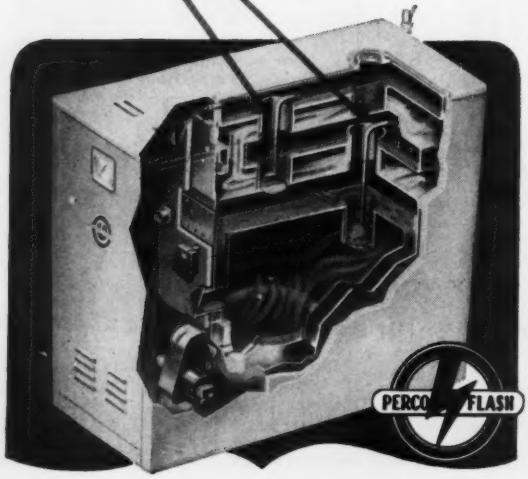
I hesitated for many months and consulted with at least a dozen heating experts last year before finally making a decision to use your Percoflash Boiler in the hundreds of homes I am building in Bergen County, New Jersey. I am sending you this letter to inform you how happy and well satisfied I am with having selected your outstanding product.
My development, as you probably know, occupies many acres. No one has to tell you that Jersey winters can be mean, miserable and cold. A heating system which did the trick both from the standpoint of warmth and economy was the most essential part of my program. Your fine boiler which intrigues my new every respect. One thing in particular which intrigues my new home owners, including myself, is the abundance of hot water your system provides. To say that phase, together with its amazing economy, is the talk along the fence lines would be putting it mildly.
I have been engaged in the construction business for many years and have had occasion to use a considerable number of different heating systems. This happens to be my biggest and most successful project and your Percoflash has played a mighty important part. The Spring of the year is on hand and we are now completing plans for further developments. I say without hesitation that when it comes to selecting our heating plants we will continue to demand the best and the best is Percoflash--economically, from an appearance standpoint and for all-around performance.
Very Truly Yours,
William Berger
William Berger, sec'y.
WB:r

The PATENTED *Boiler With the* PERCOLATING PRINCIPLE!

Percoflash Boiler
Model No. 202



County Builders, like hundreds of other successful Builders and Developers, immediately recognized the outstanding benefits found only in the Patented Percoflash Heating Boiler. County Builders have installed hundreds of Percoflash Boiler-Burner Units (background picture a part of its Paramus, New Jersey, development) and testify to their marvelous pick up, true economy, splendid appearance, and abundance of year-around domestic hot water.

These outstanding features are passed along to the Home Owner at no additional cost over the ordinary conventional type heater.

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MADISON, NEW JERSEY

PERCOFLASH

THE *finest* BOILER for OIL, GAS, or STOKER

Insulating Techniques

(Continued from page 146)

the free flow of coal in the hopper and chutes.

The heating contractor on this job installed an ingeniously designed steam heating system, consisting of copper tube helically wound around the inside tip of the hopper to carry steam at 340 deg. Maximum heating value is obtained from the steam, and waste heat to the atmosphere is eliminated, by encasing the tube-bank in a mineral wool blanket covering.

Coal thus has no chance to freeze at the hopper outlet and continuously feeds, by gravity, to the boilers below. Coal above the insulated tip keeps pressing downward into the tip as it empties. This job paid for itself by assuring a constant supply of fuel and avoiding expensive down-time.

Insulation is applied to the conical hopper tip as follows:

Step one: Two-inch mineral wool blankets are cut and shaped to fit the surface of the tip of the cone. Blankets are supplied with wire mesh netting attached on one face and expanded metal lath on the other. The wire mesh netting is installed next to the copper tube. Adjacent blanket sections are laced tightly together by galvanized wire woven through the abutting expanded lath coverings.

Step two: A half-inch layer of mineral wool insulating cement is trowelled onto the metal lath.

Step three: A one-quarter-inch coat of fibrated asphaltic emulsion is applied over the cement.

Step four: After drying, the asphaltic emulsion is then painted with a prime coat of aluminum paint and the completed installation painted the same color as the hopper.

The main section of the hopper itself is cylindrical in shape, only the lower section being conical. About 50 tons of coal per day are used by the plant and this tonnage is daily brought into the hopper by a bucket-type conveyor-elevator. The hopper holds enough coal for several days. Thus, mechanical failure of the elevating system would not result in down-time.

Similar insulated applications of heat will prevent freezing up of outdoor hoppers having other purposes—for example, handling ores, granulated chemicals, and building products.

Another interesting application example is the problem of the chemical manufacturer who required that a parallel bank of high temperature steam lines

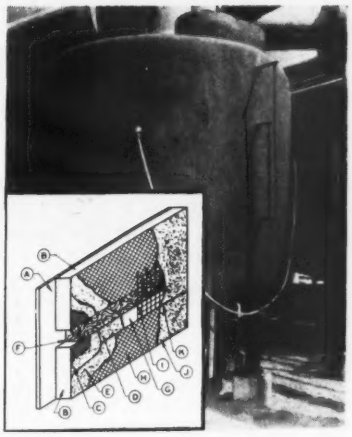


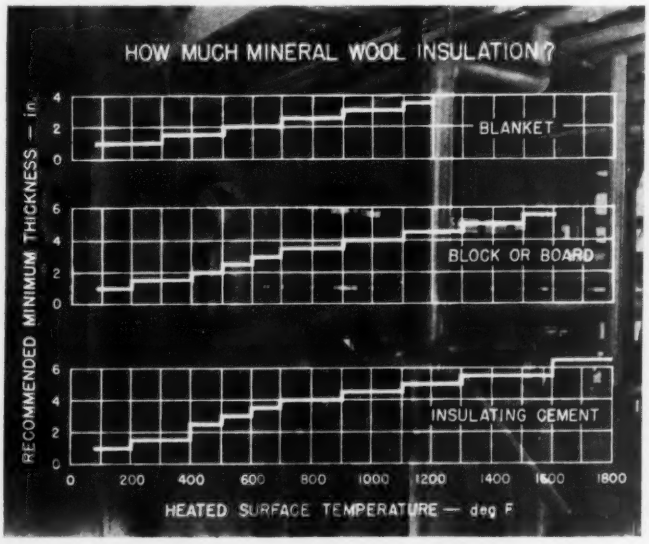
Fig. 4: To allow for thermal expansion when insulating large metal vessels, the technique illustrated above shows how mineral wool expansion joints are used. See text for details.

leading from a waste-heat boiler be insulated to cut heat loss. At first it was planned to insulate each pipe individually, then later the contractor found that it would be more feasible and far less costly to insulate the entire bank of pipes as a unit. The pipes run from the boiler to an overhead distributor drum.

Mineral wool blankets and mineral wool insulating cement were used on this section of the job as well as for insulating large-diameter ducts, heat exchangers, economizers, and converters. (See Fig. 3 on pg. 146.)

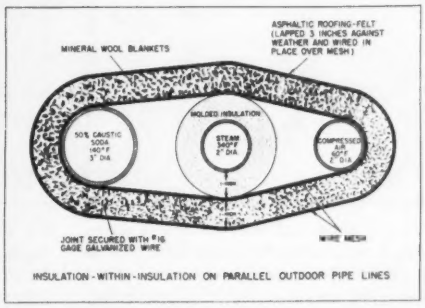
The blanket application was

(Please turn to top of page 159)


HOW MUCH MINERAL WOOL INSULATION?
RECOMMENDED MINIMUM THICKNESS — in.
BLANKET
BLOCK OR BOARD
INSULATING CEMENT
0 200 400 600 800 1000 1200 1400 1600 1800
HEATED SURFACE TEMPERATURE — deg F

At left, Fig. 5: This chart shows the correct thickness of mineral wool insulation to apply over a metal surface. It considers such factors as temperature, location, type of mineral wool (block, blanket or cement). For outdoor locations, add ½ in., for underground locations, subtract a ½ in.

Below, Fig. 6: This unique application of mineral wool insulation to process lines in a chemical factory prevents both freezing and overheating of the lines under all weather conditions.


MINERAL WOOL BLANKETS
ASPHALTIC ROOFING-FELT (LAPPED 3 INCHES AGAINST WEATHER AND WIRED IN PLACE OVER MESH)
MOLDED INSULATION
50% CAUSTIC SODA 140°F 3" DIA
STEAM 340°F 2" DIA
COMPRESSED AIR 60°F 2" DIA
JOINT SECURED WITH #16 GAGE GALVANIZED WIRE
WIRE MESH

INSULATION-WITHIN-INSULATION ON PARALLEL OUTDOOR PIPE LINES

Oil Burner Servicing

Practical installation tips are featured in this article on the piping system for high pressure oil burners

17th Article of a Series

By Fred Feigenbaum
Instructor, YMCA Trade School
New York City

BOTH a practical and a theoretical knowledge of the piping system in an oil burner installation is of considerable importance to the heating contractor and his servicemen. For, while the function of piping, that of carrying the oil from the tank to the burner, is, in a sense, a subordinate one; nevertheless, no heating installation, no matter how elaborate, is any better than its piping system.

Dealing primarily with two-pipe systems, this article examines the peculiarities and advantages of this type of piping. Also included are practical tips for various kinds of two-pipe hookups.

The need for and uses of a two-pipe system are best approached by first examining the function of the *bypass* in the one-pipe system.

When a pump is installed "single-pipe" a *local bypass* is used to dispose of all the oil not delivered to the nozzle. This is found in most so-called "gravity" installations, in which the pump exerts no force on the incoming oil. (See Fig. A.)

In modern fuel units the local bypass is usually internal; in older units it is through an external tube connecting the off-side of the regulating valve back to the pump inlet. In small domestic installations more than 90 percent of the oil pumped is bypassed.

When a standard pump unit is to be converted to a two-pipe hookup the local bypass must be closed. In most units this is a simple operation. A ⅛th pipe plug is inserted into the port or the strainer cover is reversed. (See Fig. B, below.)

Reasons for Two-Pipe System

Closing the internal bypass makes it necessary for the return port to be left open; otherwise there would be no passage to discharge the excess oil. Enormous pressure would be built up, which might damage the pump and overload the motor. Shaft seals have blown out during the first second of operation under this condition. The serviceman should keep in mind the fact that there are only two directions in which bypassed oil can flow: through the *internal bypass*, or through the *return outlet*. Either one passage or the other must remain open.

Many reasons are frequently advanced for the use of the two-pipe system, as opposed to the one-pipe hookup, but the basic reason is that the form-

(Please turn to top of page 152)

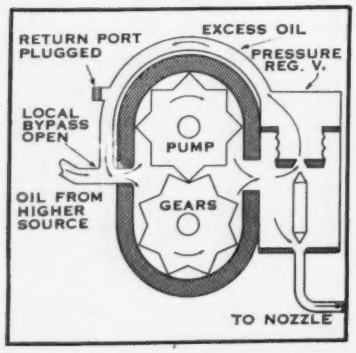


Fig. A: When oil is supplied from a source placed higher than the pump there is little possibility of air getting into pump, and a single-pipe hookup is used with local bypass.

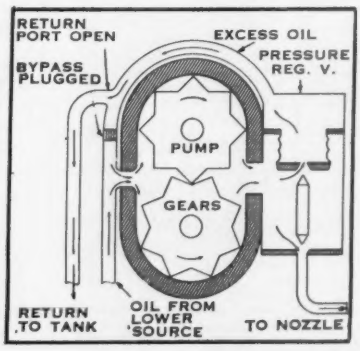


Fig. B: When oil is pumped from a lower source, or against other resistance, there may be air problems. For this reason a two-pipe hookup is used to eliminate excess oil.

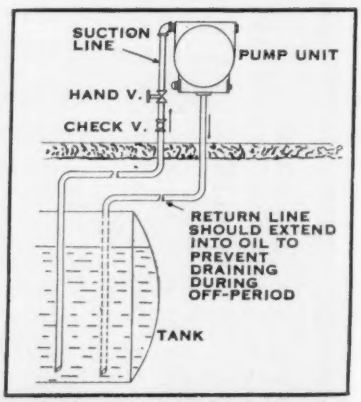


Fig. E: Recommended piping method when the tank is located below the basement floor.

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*Old Timer

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Where Quality is a Responsibility and Fair Dealing an Obligation

Oil Burner Servicing

(Continued from bottom of page 150)

er offers the system a better opportunity to rid itself of *air.*

The oil burner pump, especially as it becomes older, is easily upset by air infiltration. No matter at what point this air enters the system it will always end up at the pump; and if the pump has no means of getting rid of it, it must be pumped over and over again through the local bypass. Each time it enters the pump it interferes with the pumping of oil; and if allowed to continue accumulating, it eventually stops the pump. We call such a pump *airbound.*

It is true that some of this accumulated air is discharged through the nozzle, but this in itself is undesirable, causing flame fluctuations, sloppy cut-off, and sometimes momentary flame-failure . . . a dangerous condition. Hooked up one-pipe, the pump can adequately perform all of its normal functions *except ridding itself of air.*

To overcome these effects of air, the two-pipe hook-up was devised. It is based on the experience of oil burner men that *no pumping system can be considered perfectly air-tight.* Even though installed by top-grade workmen, using first class materials, there is always the *possibility* of air infiltration.

Leaks Difficult to Detect

Such a condition may not be present when the job is newly installed, but with use and age comes that inevitable deterioration, and eventually, the air gets into the system. This would not present too serious a problem to the serviceman were the pipes all out in the open, but once buried—sometimes beneath concrete—the piping is not easily reached and this complicates matters. Even a leak —or combination of leaks—adding up to the size of a pinhole can cause airbinding. With a two-pipe system it is possible to exhaust any reasonable amount of air back to the tank along with the excess oil; thus, even with minor leaks, the system can continue to operate efficiently.

In order for air to infiltrate into a supply line there must be an *opening* and *pressure differential.* The latter is caused by oil being drawn against resistance; that is, with a partial vacuum inside the system opposed to the atmospheric pressure outside.

Therefore, the guiding principle for installing a pump should be: *A return line is necessary in all cases in which a vacuum can be expected to exist in any part of the supply system.* Because it is practically impossible to prevent air from getting into such a system, it is then essential to supply a means for getting rid of it. The return pipe serves this function.

It is sometimes stated in some pipe literature that the return line makes the pump *self-venting.*

While this is true in the sense that *venting* means *air elimination*, it is confusing to those who prefer to think of venting as a term applied to the removal of original air from the pump in a new installation, or after dry-tank. Few one-stage pumps will vent themselves easily through the return line under this condition, unless, of course, the line of supply is short.

The two-pipe hookup is found in various types of installations:

(1) Tank buried outdoors, lower than pump;

(2) Tank indoors, at pump level, or higher;

(3) Indoor tank of large capacity, required by regulations to supply fuel through the top opening;

(4) Tank buried beneath basement floor; usually lower than pump;

(5) In a few installations where the supply is entirely above pump level, able to supply the pump by gravity. (Such a hookup adds little to the job, is more costly, and is seldom found in highly competitive work.)

Figs. C and D (page 154) illustrate two methods of piping in which the tank is outside the house. (These drawings are schematic and do not, therefore, show the necessary swing-joints, etc.)

In Fig. C, the tank is buried entirely below the level of the pump. Piping is generally run just below grade, brought through the foundation wall at that level, dropped vertically to the floor, and run in a channel to the burner.

On a fresh start, with dry lines, the pump must exert enough vacuum to lift the oil to the highest part of the suction line. Once the inside drop-piece is filled, the high piping is self balancing. Under operating conditions the total *lift* required is only that between the surface of the fuel in the tank and the level of the pump.

Installation of Check Valve

A check-valve is installed just inside the building wall. During "off" periods, the oil on the tank-side of this valve could be said to be "hanging" from it; that is, the weight of the oil beneath it would be helping pull the ball down into its seat. There would be vacuum at all points between the check-valve and the oil level in the tank.

Off-period leaks are often the cause of the pump becoming airbound. These leaks are active not only when the burner is operating, but continuously, because there is always a vacuum in that part of the pipe. Sometimes a pump is found which is unable to recover its prime on a fresh morning start, but once started it may maintain itself airfree by frequent operations during the day.

It is sometimes said that the best location for a check-valve is at the bottom of the suction line, in the tank. (Check-valves made for this position

(Please turn to top of page 154)

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"That's the way I feel about Webster Electric—I can specify their products and know that I can get just what I need to meet any requirements. It proves that old hands in this business know what we servicemen want and need. Take Webster Electric Transformers, for example: They're dependable . . . give a sure start every time. With three series of transformers, and with a variety of mounting plates to fit each series, it is possible to fit nearly every burner. Openings are large enough to make easy connections. I know, too that every transformer in the Webster Electric line is made to rigid specifications for quality. . . . That's why, in a recent survey, Webster Electric was greatly preferred by the majority of Old Timers like me."

*Old Timer

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Where Quality is a Responsibility and Fair Dealing an Obligation

Oil Burner Servicing

(Continued from bottom of page 153)

are called foot-valves.) And from a theoretical viewpoint this is the ideal way to keep a solid column of oil in the suction piping. In practice, however, it would be difficult to reach such a valve for service, unless, of course, access were to be provided at the time of installation.

Other outdoor locations would be similarly difficult, especially in winter. For this reason, most top-notch contractors install the check-valve just inside the building wall, as shown in Fig. C.

Flapper-checks, and other types used for steam and other purposes, are not considered best for oil lines. The *ball-check* is favored, especially the type called "soft-seat," in which the ball falls into a seat of neoprene or suitable plastic.

Since the force demanded of the pump to open a check-valve is very small, there is no objection to using more than one such valve in a suction line. Failure of check-valves usually results in leakage and lost prime. Occasionally the working member sticks, cutting off oil flow.

Check-valves are sometimes used in return lines, though this application is frowned upon by some authorities. A stuck valve would cause excess pressure to be built up by the pump, very likely blowing the shaft seal and flooding the basement.

Note that the return line in Fig. C is piped right down into the tank, like the suction line. This is recommended practice. It converts the entire pumping system into an inverted (though more complex) U-tube, preventing back-siphoning in case of failure of the check-valve. The oil columns in the two arms balance each other. One sometimes encounters this method used without a check-valve. While this has the same effect, it does not provide against prime-loss from air leaks in the pump or piping.

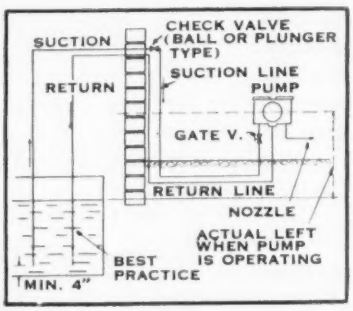


Fig. C: One method for piping when tank is outside the house, entirely buried below the pump level.

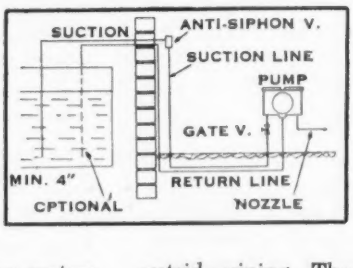


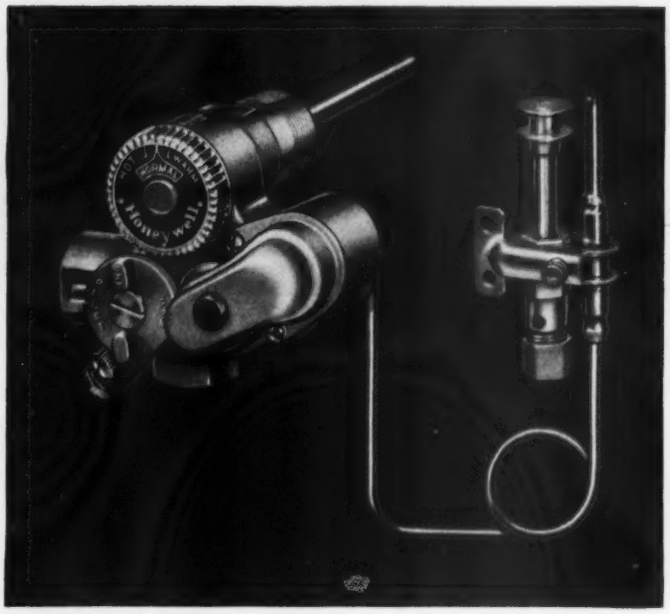
Fig. D: A method for piping when the tank is largely above pump level.

Fig. D illustrates a similar hookup, except that the tank is largely above the pump level. The only *lift* would be on a dry start, when it would be necessary for the pump to draw oil up to the highest piping level. Under free-flowing conditions this system could be regarded as "gravity-fed." Such an installation is occasionally found hooked up single-pipe, though this is not considered good practice because some vacuum exists in the upper piping, creating one of the conditions for air infiltration.

In most cities an *anti-siphon* valve must be used when a tank of 550 gallons or greater capacity is installed above the burner level. This is usually placed at the entrance point of the piping into the house, as shown. Its purpose is to prevent flooding of the basement in case of breakage of the pipe inside the house.

The anti-siphon valve is usually diaphragm or bellows operated, requiring the pump to exert from 5 to 10 inches of vacuum to open it. A two-pipe hookup is necessary when this valve is used, because of the vacuum created in the supply piping. While the burner is operating the valve is held in its full-open position. At shutdown, it is closed, maintaining the oil in a no-flow condition until the next start. Off-period air-leaks of any consequence would be rare in this type of hookup, since the lift to the highest point in the piping is seldom more than 4 ft. Encountering an air bound pump, the serviceman would be right in assuming that it was probably caused by a leaky diaphragm or bellows in the anti-siphon valve, causing air to be taken in during operation. Secondary causes might be at the packing gland of the hand valve or at the strainer cover. Otherwise, air infiltration might be suspected at any point in the inside or outside piping. The dotted line in the tank indicates a stub of the return line which may be carried down to the tank bottom, as in Fig. C. This has no particular advantage when the tank is high, though it is quite often installed in this manner.

Fig. E (page 150) shows the piping method recommended when the tank is below the basement floor. In this condition, the pump is at the highest point in the system. This is a critical location in that even a small amount of air leaking into the lines will naturally seek the highest level during the "off" period and thus cause trouble. For this reason it is doubly important to install a good check-valve in the suction line to help to prevent loss of prime when the burner is idle.



Now! Honeywell Brings You A Low-Cost "Watertender"!

That's mighty good news—as all of you who are familiar with the dependable, trouble-free operation of Honeywell's famous V5105 "Watertender" control for water heaters will recognize. For the *remarkable new V5119* gives you most of the advantages of the V5105—at a much *lower cost!*

It's just another of the many reasons why Honeywell is *First in Controls.*

This new combination control for water heaters incorporates in one unit a main gas cock, with pilot position, pilot adjustment screw, flow regulation valve, thermostat, and thermomagnetic pilot.

Send the coupon below today for detailed information on the new V5119 "Watertender."

MINNEAPOLIS **Honeywell**

Appliance Controls

APPLIANCE CONTROLS DIVISION
Minneapolis-Honeywell Regulator Co., Dept. DE-6-101
8775 Mettler St., Los Angeles 3, California

Send me detailed information on the new V5119 "Watertender" for water heaters.

*Name*_____

*Firm Name*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

Item 11: W. J. Chappell and G. W. Schultz, regional managers for Timken Silent Automatic Division examine a boiler and water heater unit. Item 12: The center picture shows A. J. Anderson and D. Wepman, York-Shipley advertising manager examining the company's suspended type winter air conditioner. Item 13: Lined up in the Toridheet Division of Cleveland Steel Products Corp. booth are D. C. Hildebrecht, John W. Hand, R. J. Lucas (general manager for the company), L. F. Dienst, H. M. Soyster and D. W. Rouse.

Item 14: Shown with Fitzgibbon Boiler Co.'s display of its new "400" series are, left to right, M. May, M. Heminway, O. Noss, J. Collette and P. K. Addams, president. Item 15: C. B. Wilson, general manager of Klemm Automotive Products Co. demonstrates the ease of servicing one of the firm's new line of oil filters with the "visible Chemistone element." Item 16: Standing by the display of the Field Control Division, H. D. Conkey & Co. are, left to right, R. Glass, C. Potter, G. Peterson, W. Davis and E. Smith.

New Products at the Oil Heat Show

• See first report, May issue •

THIS ARTICLE CONTINUES the description of some of the new products exhibited at the Oil-Heat show held in Chicago on April 2-6.

Next month DOMESTIC ENGINEERING will report on "Combustion Products and Smoke," one of the interesting subjects discussed at the convention.

A description of the new products is given below.

Item 11—Boiler-Burner Unit

The Timken Silent Automatic Division's wall-flame oil burner featured the Jackson, Mich. company's exhibit. On display, was the Model OBW-80 kitchen-type burner-boiler unit. It features home heating plus water heating—complete in one kitchen-styled cabinet and is especially designed as a cost and space saver in modern small home heating.

By tucking the unit away in a corner of the kitchen, architects please their clients, builders gain an important sales appeal, and at the same time the elimination of furnace rooms keeps construction costs down. Owners gain additional living space and both first cost and operating cost are in line with limited budgets, representatives indicated.

Item 12—Suspended Type Winter Air Conditioner

York-Shipley of York, Pa. displayed its oil-fired forced warm air suspended type winter air conditioners in its booth at the April show.

Designed to furnish completely automatic heat, plus winter air conditioning, heated, filtered, circulated air—from a compact unit planned for suspended installation, the units are perfect for installation in garages, service stations, attics, crawl spaces—or wherever space is at a premium, according to York representatives.

Item 13—New Boiler Burner Unit

"Built to last a lifetime," was the point emphasized by Toridheet's general manager, R. J. Lucas, in describing the Cleveland firm's Model

(Please turn to top of page 212)

THESE MEN ARE *Pipe Fitting Experts*

Job by job, the people at Union Malleable are experts at their work. They are "career men" in the field of pipe fittings, many of them have been with the company for over twenty-five years. Many a family, too, has several of its members working at Union Malleable. Husbands and wives, fathers and sons, cousins and uncles. All of this adds up to an important ingredient in the fittings we make.

When a company is composed of people who take a "lifetime" interest in their work, the result is better manufacturing and better products. At Union Malleable there is a full measure of real interest in making the best products obtainable in the field. Constant checking and rigid inspections add a final insurance of top quality. The superior "U" Brand line of pipe fittings in both malleable iron and cast brass solder joint type is recognized and used throughout the world.

The U-Brand line includes: Malleable Iron Pipe Fittings and Unions — Plugs, Bushings and Floor Flanges — Steel Pipe Nipples — Cast Brass Solder Joint Fittings — Wrought Steel Couplings.

The UNION MALLEABLE MFG. CO.
ASHLAND, OHIO
U. S. A.

DISTRIBUTED THROUGH WHOLESALERS ALL OVER THE WORLD

WE CAN GIVE YOU IMMEDIATE DELIVERY

ON ALL SIZE PACKAGES OF **BASEBOARD RADIATION**

floorlevel

HOT WATER BASEBOARD RADIATION

GET READY FOR BIG SUMMER SALES NOW!

Just tell us how much radiation is needed for your size jobs. *Complete systems* will be shipped *ready to install!* Packaged complete in six sizes . . . from 200 to 366 sq. ft. of radiation.

SPONGE RUBBER DUST SEAL ALONG BACK (Prevents Wall Streaks)
SOLID METAL TOP MOULDING
DAMPER FOR HEAT CONTROL
SNAP-ON METAL PANEL (Easy to Remove)
ATTRACTIVE SNAP-ON CORNER TRIM (Conceals section joints)
AIR FLOW
ONE PIECE Supporting WALL BRACKET

ALL over the United States . . . in individual homes, row homes and complete apartment projects. There's a *Floorlevel* installation near YOU!

HOME OWNERS ARE EASY TO SELL!

ALL-IN-ONE COMPLETE PACKAGE

DE-AIRATOR TANK
A "MUST" For Hot Water Baseboard Heating Systems. A positive eliminator of air troubles.

SEND FOR SPEC. 56
Find out how you can cash in on this profit package . . . NOW!

GENERAL Automatic

GENERAL AUTOMATIC PRODUCTS CORP., 2300 Sinclair Lane, Baltimore 13, Md.
MFGRS. OF A COMPLETE LINE OF OIL & GAS FIRED HEATING EQUIPMENT

Pipe and Boiler Insulation

(Continued from bottom of page 149)

completed in two steps as follows:

Step one: 1-in. thick mineral wool blankets, with wire mesh backing on both sides, were wrapped around the entire bank of pipes and secured in place with ½-in. galvanized bands on approximately 8-in. centers. The blankets were butted tightly together and laced with wire through the edges of abutting mesh.

Step two: A ½-in. coating of mineral wool cement was trowelled over the blanketing to provide a tightly sealed, neat appearing exterior. It was a simple matter to trowel the cement in place over the wire mesh blanket covering.

This same technique can be used out-of-doors, although thicker blankets are generally required due to seasonal temperature variations and greater average air movement over the surface. A coat of ¼-in. thick asphaltic weather-proofing with galvanized wire netting as reinforcing should be applied over the insulating cement.

In addition to increasing thermal efficiencies of high-temperature equipment, mineral wool insulation also prevents heat leakage into work areas and adds to employee comfort where operations must be carried out in close proximity to high-temperature units.

The following table provides a helpful guide in specifying mineral wool blanket thicknesses for temperature ranges up to 1200 deg.

Often the question arises as to the correct thickness and amount of mineral wool insulation to apply to a specific job or problem. It's a well known fact that industrial insulation pays for itself many times over when applied to the proper thickness. Where it's too thin for the job the customer loses money—where it's too thick he's paying too much for labor and materials. To keep on the good side of the customer and win his recommendations, check the chart shown in Fig. 5 on page 149. This chart helps you determine the proper insulation thickness to use.

Recommended Minimum Insulation Thicknesses—Mineral Wool Blankets

The insulation thicknesses listed are recommended for indoor locations: For outdoor locations, increase insulation thickness not less than ½ inch. For underground application, thickness may be decreased ½ in. when specified.

Temperature °F	Thickness in.	Temperature °F	Thickness in.
Up to 300	1	700 to 900	2½
300 to 500	1½	900 to 1,100	3
500 to 700	2	1,100 to 1,200	3½

The type of insulating material as well as the heated surface temperature, determines the correct insulation thickness. At temperatures from 70 to 1800 deg the chart gives the recommended minimum thicknesses of mineral wool in its blanket, block (or board) and insulating cement forms. These thicknesses are for indoor locations. For outdoor jobs, add half an inch; for underground installations, subtract half an inch.

Let's go to the consideration of problems involving insulation of large, heated metal vessels, such as boilers, tanks, towers, finishing ovens and furnaces. One of the toughest parts of planning the insulation job on these units is correct allowance for expansion. During initial firing or shutdown, appreciable expansion or contraction (with temperature change) is an unavoidable and well known physical fact.

Unless precautionary measures are taken, the insulation on such large surfaces will crack and buckle. It is useful, therefore, to know how to design expansion joints which will enable the insulating layer to expand and contract with the metal surface.

On equipment operating above 600 deg, horizontal expansion joints should be provided at 12 to 16 ft intervals. As shown in Fig. 4, on page 149, these joints consist essentially of 1½ to 2 in. wide furrows of loose mineral wool, covered with protecting flaps of galvanized hardware cloth, between adjacent blanket edges.

The exact sequence of application of materials can be followed (from A to I) in Fig. 4 on page 149, the width of the mastic and rosin paper strips (D and G) adjacent to the cleavage side of the furrow being 4 in.

The bottom edge of the hardware cloth flap (I) is left free to move up or down as the metal surface expands or contracts. Finally, after asphalt weatherproofing mastic (J) is trowelled over the whole job, a line of cleavage (K) is struck at the lower edge of each expansion flap with the point of a trowel. Following are the steps used and the material applied in sequence.

These are the elements recommended for installing mineral wool expansion joints on heated vessels like the one pictured in Fig. 4: A,heated surface; B,mineral wool blanket insulation; C,first ¼-in. layer of insulating cement; D,asphalt mastic strip; E,second ¼-in. layer of insulating cement; F,loose mineral wool fill; G,rosin-sized paper; H,

(Please turn to top of page 207)

News of the Month

June • 1951

—CONTRACTORS • WHOLESALERS • MANUFACTURERS

Peery CSA Secretary

J. H. Peery

The Central Supply Assn. recently announced the appointment of James H. Peery to fill the secretary's post left open by the resignation of Stuart Rambo. He took over his new job May 1.

Mr. Peery comes to the CSA from Huntington, West Va., where he was manager of the plumbing and heating division of Banks-Miller Supply Company. He entered the plumbing and heating industry in 1937 in Charleston, West Va., where he was associated with a contractor-dealer.

Mr. Rambo leaves the association, which he served for six years, to open his own supply house in Eau Claire, Wis. The name of his firm is the Eau Claire Plumbing Supply Company.

ASHVE Life Members

The American Society of Heating and Ventilating Engineers recently announced the election of six new life members. They are: Gustav A. Dronheim, New York; Byron K. Eaton, Hinsdale, Ill.; Coll Turner Flint, Boston; J. Ambler Johnston, Richmond, Va.; Van Applegate Reed, Jr., Pittsburgh, and Carl Edward Zibold, White Plains, New York.

Hammel War Division

Hammel Radiator Engineering Company, Los Angeles manufacturer of automatic gas heating equipment for residential and commercial use, recently announced the creation of a war plant division.

The new division will contain a modern, well-equipped precision machine shop with turret lathes as large as 2½ inch capacity plus basic equipment for all types of sheet metal fabrication.

According to A. S. Martinson, president of the firm, "It is a requisite that each manufacturer bring his facilities and personnel up to maximum capacity in view of the present world crisis."

Launch Sales Campaign

A new sales promotion program was recently launched by the A. O. Smith Corp. Water Heater Division as part of its 1951 "Golden Profitunity Sales Idea" contest.

The program, ranging from direct mail pieces to television spot announcements, is either listed or illustrated in a "Profitunity Promotion Packet" which has been mailed from the Kankakee, Ill factory to all distributors, utilities and dealers.

A group of Wisconsin dealers are introduced to the new A. O. Smith sales campaign while on the way to make a tour of the factory.

Cooperative merchandising plans are also outlined in the packet, as are price schedules for newspaper ad mats, dealer identification material including servicemen's uniforms, matchbooks, decals and varied other selling aids.

Sonneborn Elected

The board of directors of Chicago Nipple Manufacturing Company recently elected R. H. Sonneborn vice president in charge of sales, according to an announcement made by J. Lester Williams, Jr., president. Mr. Sonneborn has been with the company for eight years and was formerly secretary and general manager of sales.

Mr. Williams also announced the election of E. Condit, former treasurer, as secretary and treasurer, and A. Preiwisch as assistant secretary.

Short Estimating Form

The National Warm Air Heating and Air Conditioning Assn. recently announced tentative plans for the publishing of a new short form for estimating costs of warm air heating installations. Known as "Form 6—Job Estimate Form For Warm Air Heating Systems," this form has been developed by the association's Installation Codes Committee, to meet the demands made by heating contractors for simpler, shorter and quicker method to figure jobs for estimating purposes.

The new form is based directly on the accepted design and installation manuals developed by the association, and will aid the contractor or his salesman to arrive at the heating requirements of a building easily and rapidly, yet without sacrifice to accuracy.

Coming Events

National Conventions

June 11-14—ASME—Semi-annual meeting of the American Society of Mechanical Engineers; to be held at the Royal York Hotel, Toronto, Canada.

June 25-26—SMA—Annual meeting of the Stoker Manufacturers Assn.; to be held at the South Shore Inn, Lake Wawasee, Syracuse, Ind.

July 2-4—ASHVE—Semi-annual meeting of the American Society of Heating and Ventilating Engineers; to be held in Portland, Ore.

Sept. 16-21—ASSE—The 45th annual meeting of the American Society of Sanitary Engineering; to be held at the Statler Hotel, Detroit.

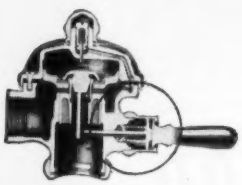
Oct. 9-10—MAWA—10th annual convention of the Middle Atlantic Wholesalers Assn.; to be held at the Mayflower Hotel, Washington.

Oct. 15-17—AGA—33rd annual convention of the American Gas Assn.; to be

(Please turn to top of page 163)

Fine Flush Valves for Fine Buildings

For complete information on Watrous Flush Valves write for catalog No. 449-A.



Among Watrous Fine Features

Self-Tightening Handle Packing

The spring-loaded packed stem in Watrous Flush Valves automatically maintains proper tension on the packing at all times. Provides real protection against leakage, yet requires no periodic tightening.

SAKOWITZ BUILDING,

Houston, Texas, department store, one of the many fine buildings equipped with Watrous Flush Valves.

ALFRED C. FINN, F.A.I.A.
Architect

REG. F. TAYLOR
Mechanical Engineers

BARBER PLUMBING COMPANY
Mechanical Contractors

Watrous

ADJUSTABLE FLUSH VALVES

BOTH DIAPHRAGM AND PISTON TYPES

THE IMPERIAL BRASS MANUFACTURING COMPANY

1231 W. Harrison Street • Chicago 7, Illinois

Distributed Through Wholesalers of Plumbing Materials

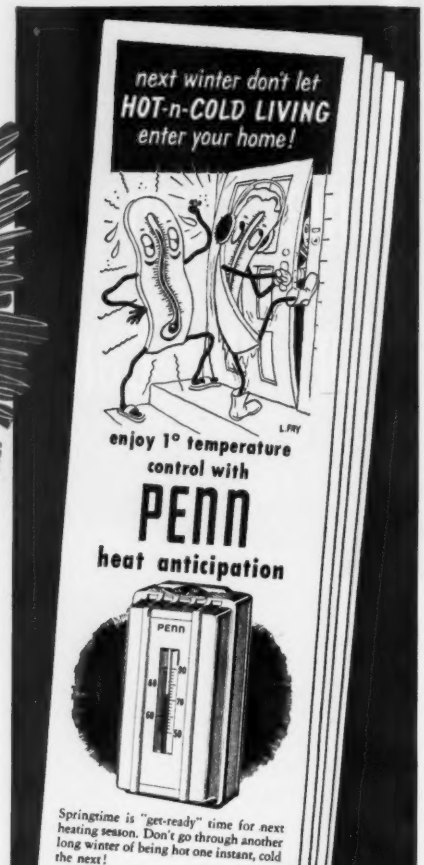
NOW is the time to sell BETTER HEAT

. . . and PENN helps you with strong national advertising

Millions of prospects are being reminded by PENN's strong national advertising that springtime is "get-ready" time for next heating season. Yes . . . they're being informed on how to avoid HOT-n-COLD LIVING by calling *you, their heating dealer!*

Take advantage of this extra sales help PENN is giving you. Show your prospects why automatic heat controlled by the PENN *heat-anticipating* thermostat is their best buy for economy and unsurpassed heating comfort. And this is true whether they are installing a new heating plant or modernizing their old system!

Remember . . . for 17 years, PENN *heat-anticipating* thermostats have proved their ability to control room temperatures more closely . . . to compensate automatically for outside weather changes . . . to provide healthful heating comfort by eliminating HOT-n-COLD LIVING. For greater customer satisfaction, greater good-will, greater profit . . . recommend and install PENN heating controls. **Penn Electric Switch Co., Goshen, Indiana.** Export Division: 13 E. 40th Street, New York 16, N. Y., U.S.A. In Canada: Penn Controls Limited, Toronto, Ontario.


next winter don't let
HOT-n-COLD LIVING
enter your home!
L.FAY
enjoy 1° temperature control with
PENN
heat anticipation
PENN
Springtime is "get-ready" time for next heating season. Don't go through another long winter of being hot one instant, cold the next!
Call your heating dealer today. Ask him about automatic heat controlled by the PENN heat-anticipating thermostat. This thermostat has the uncanny ability to "anticipate" temperature changes and start the burner before the room can become uncomfortable.
In addition, this exceptionally accurate control stops fuel waste caused by HOT-n-COLD heating. And for even greater fuel economy of automatic day-night control, also get the PENN Tem-Clock. For automatic heating at its best . . . get PENN heat anticipation . . . it costs no more!
Penn Electric Switch Co., Goshen, Indiana
ENGINEERED COMFORT
PENN
AUTOMATIC CONTROLS
Selected by leading manufacturers for over 30 years
FOR HEATING, REFRIGERATION, AIR CONDITIONING PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

As advertised in the June issues of
BETTER HOMES & GARDENS
AMERICAN HOME
NEWSWEEK

PENN AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

News of the Month

(Continued from page 160)

held at the Statler, Lennox, Jefferson and Mayfair Hotels, St. Louis.

Nov. 5-8—REMA—7th All-Industry Refrigeration and Air Conditioning Exposition; to be held at Navy Pier, Chicago.

Dec. 5-6—WAHACA—Annual convention of the National Warm Air Heating and Air Conditioning Assn.; to be held at the Hotel Cleveland, Cleveland.

State Conventions

June 15-17—New Jersey—21st annual convention of the New Jersey State League of Master Plumbers, Inc.; to be held at the Ritz-Carlton Hotel, Atlantic City.

Sept. 14-16—Utah—Annual convention of the Utah State Master Plumbers Assn.; to be held at the Hotel Newhouse, Salt Lake City.

Sept. 14-16—Meeting of the New England Plumbing and Heating Wholesalers; to be held at the Balsam Hotel, Dixville Notch, N. H.

Republic Opens Campaign

Republic Heater Corporation, of Los Angeles, has just inaugurated the largest advertising campaign in its history.

This campaign coincides with Republic's move into its new million dollar, 5-acre plant and the expansion of plant facilities for the manufacture of gas floor furnaces, wall heaters, water softeners and air conditioning units.

According to the firm's advertising agency, the campaign will begin with a 12-page, three color insert in several industry magazines. Other media to be used consists of consumer magazines, radio and television.

Ferguson Retires

Charles A. Ferguson recently announced his retirement from the office of president of the Noland Company, Newport News, Va.

Lloyd U. Noland, Jr., vice president of the firm, is assuming his duties until the board of directors can meet.

Trenton

The newly elected president of the Master Plumbers Assn. of the City of Trenton is Paul L. Schuster. He will be assisted by Angelo Ardadipane, first vice president; Donald B. Stewart, treasurer; Lester Perlstein, sergeant-at-arms, and William J. Lee, trustee.

Increase Sales Group

At the recent meeting of Sales Representatives, Inc., three new members were elected, according to president Sidney L. Fisher. The new members are the Dellon Sales Co., Samuel Greenberg and Leo J. Goldstein. In May, this association of manufacturers representatives in the metropolitan New York district will celebrate its ninth anniversary.

I-B-R School

The School of Modern Heating, sponsored by the Institute of Boiler and Radiator Manufacturers, celebrated its first anniversary recently. More than 2500 students have attended the school in 44 cities since it began.

Launched with the object of bringing to heating contractors, service men and representatives of wholesalers and manufacturers the newest and best methods of figuring heat losses and estimating radiation and boiler requirements, the school has proved valuable to the hot water and steam heating industry.

Schools scheduled for the months of June and July include:

June 5-7 Pittsburgh, Downtown YMCA
June 12-14 Detroit, American Legion
June 19-21 Syracuse, N.Y., American Legion Hall
June 26-28 Buffalo, N.Y., Hotel Statler
July 11-13 Albany, N.Y., Odd Fellows Hall
July 17-19 Elmira, N.Y., Federation Building

Any person wishing further information should conctact the Institute of Boiler and Radiator Manufacturers, 60 East 42nd St., New York 17.

AGA Conference

The American Gas Association recently held its 1951 Domestic Research and Utilization Conference May 24-25 at the Hotel Statler, Cleveland. Technical and non-technical papers were presented covering water heating, space heating, air conditioning, and cooking.

Additional projects under the association's expanded domestic research program that were discussed are appliance venting and aeration, burners and combustion and automatic appliance ignition control. A special feature of the conference was the extensive clinics and question and answer periods dealing with research, utilization practices, servicing and change over from the standpoint of utilization. These clinics were conducted by leading manufactured and natural gas engineers and engineers from appliance and accessory companies.

Right: More than 100 students attended the I-B-R School of Modern Heating in Chicago. At this session, they learned the simple and accurate methods for figuring heat losses, estimating radiation and boiler requirements.

Expansions

New Distribution Center

The A. Y. McDonald Manufacturing Co., Cedar Rapids, recently announced the opening of a new distribution and service center in Burlington, Ia. The new plant, which consists of a large warehouse, display room and sales room, will stock the firm's complete line.

In the showroom, bathroom and kitchen fixtures are displayed in homelike settings. The sales counter offers an improved type of "at the plant" service for the dealer.

Walter Wilson is manager of this new Burlington office.

Bell & Gossett Laboratory

Bell & Gossett Company, Morton Grove, Ill., recently announced the completion of the firm's new heating research laboratory. The equipment is now being installed, according to R. E. Moore, president.

Consolidating the firm's present

(Please turn to top of page 164)

News of the Month

(Continued from page 163)

research and development departments, the new $250,000 laboratory will be under the direction of Lawrence J. Smith, research director for Bell & Gossett.

The new building is being provided with extensive proving ground equipment for current production as well as chemical and metallurgical laboratories, and unique shop equipment which will permit experimental and developmental work and pilot production of new heating and refrigeration products without interference with production of the company's normal goods.

Jamaica Expansion

Jamaica Brass Manufacturing Company, Brooklyn, announced the moving of its administrative offices to a three story structure that will give the firm an additional 26,000 square feet of floor space.

The firm also recently announced the formation of the Jamaica Nipple Manufacturing Company and the present expansion will allow this new subsidiary to expand its line of nipples and couplings to include a greater variety of products for the plumbing trade.

New Gillen Plant

In moving to a larger plant in Detroit from Dowagiac, Mich., the J. L. Gillen Company, manufacturers of oil and gas fired furnaces and water heaters, will do all their manufacturing in one plant.

The new plant is predicted to facilitate faster shipments to all parts of the country. Production in the new plant is now underway.

Open New Quarters

Arrow Utilities, Brooklyn, expects to double its air conditioning volume in 1951. This estimate was given recently by Marvin Levy, sales and engineering manager, when the air conditioning, fuel oil and heating firm recently opened its new enlarged quarters.

The firm's new home is a modern, one story building with business, engineering and executive offices as well as a large showroom. The firm has been in the fuel oil and heating installation business since 1943, and in the air conditioning field for the past four years.

Armstrong Addition

The purchase of the low- and high-temperature insulation business assets of the Asbestos Supply Companies of Seattle, Spokane, Tacoma, Oregon and Alaska by the Armstrong Cork Company of Lancaster, Pa. was announced.

The new business will be operated by Armstrong as a district office in Seattle with the previously mentioned branch offices. A. J. Stream will serve as manager.

Appointments

Worthington Pump and Machinery Corp., Harrison, N.J.—Edward Barwell as industrial relations coordinator.

York Corporation, York, Pa.—W. R. Eby as manager of the Pacific

(Please turn to top of page 166)

Contractor Conventions

(Continued from page 106)

California

FOUR RESOLUTIONS expected to create many repercussions were adopted by members of the Associated Plumbing Contractors of California at their 50th annual convention held in San Francisco May 1-3.

These resolutions include:

1. Establish one state-wide labor agreement to create uniform wages, hours and working conditions. Currently, labor pacts are on a county or regional basis.

2. Make a plumbing inspection a condition to the sale or transfer of real property containing plumbing installations in order to safeguard the purchaser and the public health by catching and correcting defective installations.

3. Rescind a national union ruling under which journeymen plumbers are ,not permitted to furnish their own tools, a restriction the contractors say is contrary to journeymen preference, increases costs and impairs efficiency.

4. Encourage local colleges to adopt a degree course in plumbing engineering as recently pioneered at San Mateo and Los Angeles.

Also at the convention, an optimistic note was sounded by Frank F. Elliott, vice president of the Crane Company, Chicago. "There will be lots left to us civilians after Uncle Sam's bigger take of our production and income for defense," he forecast. "There can be lots more left to us if we do our best in conservation and production." Elliott based his beliefs on a number of factors in the continued prosperity of the construction industry. Chief of these is the greatly increased production potential since World War II—greater, he said, than in 1944, and without an extended work week and multiple shifts.

The newly elected officers of the California association include: William H. Notthoff, Los Angeles, president; William S. Peters, San Jose, vice president; Richard Heald, Long Beach, secretary-treasurer, and Harvey H. Holland, Sacramento; Lester G. Doell, Oakland; Joseph C. Sand, San Francisco; Fred A. Schmitz, Redwood City; John Holderer, San Diego; Earl Van Atta, Puente, and Frank E. Hess, Los Angeles, as directors.

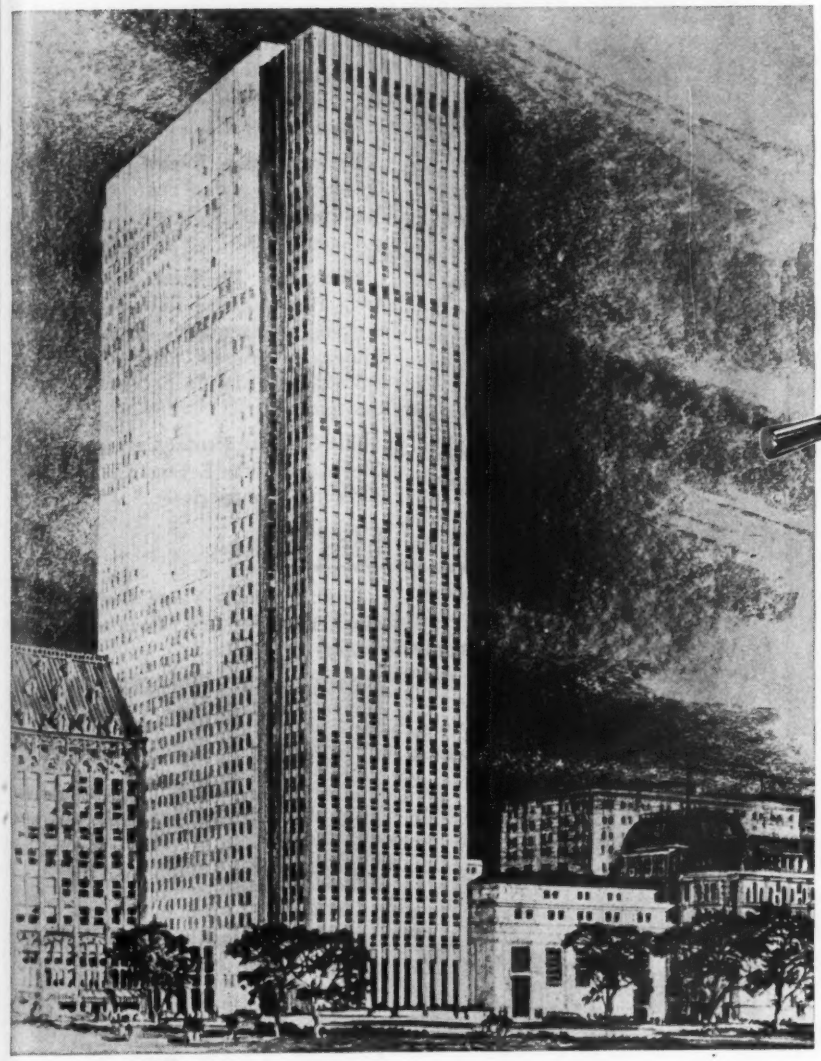
Virginia

HOPES FOR ADOPTION of a uniform plumbing code were expressed at the 28th annual convention of the Virginia Associated Plumbing and Heating Contractors, held in Roanoke recently. This was approved in the form of a resolution.

Bertram York Kinzey, executive manager, said the association is striving to eliminate the confusion caused by the approximately 40 different codes now in operation in the state. He also pointed out that by adopting the resolution, association members were pledging support for the uniform code and should urge its legislation.

At the election session, the following officers were elected: Allen Spiers, Newport News, president; D. C. Patterson, Jr., Norfolk, vice president, and N. N. Roye, Richmond, secretary. J. Herbert Hayes, Jr., Bristol, and R. R. Miller, Roanoke, were added to the board of directors.

And in Pittsburgh – A FUTURE OF FAULTLESS SERVICE



525 WILLIAM PENN PLACE BLDG.:
Pittsburgh, Pa.
ARCHITECTS:
Harrison & Abramovitz
W. Y. Cocken
MECHANICAL ENGINEER:
Meyer, Strong & Jones
PLUMBING CONTRACTOR:
Sauer, Inc.

Heralding the renaissance of Pittsburgh's "Golden Triangle" is the impressive new 41 story home of the U.S. Steel Corporation and the Mellon National Bank and Trust Company. Equipped with DELANY diaphragm type FLUSH VALVES, a total of over 1,000 sanitary fixtures will service more than 5,000 individuals daily. It follows that in so large an operation, minimized maintenance is a prime factor. After a screening of all the related design requisites, it is not surprising that DELANY foot pedal operated FLUSH VALVES and VACUUM BREAKERS were insisted upon.

Attention is directed to the exclusive, conical body structure of the DELANY Foot Pedal. Designed to slip the impact of the severest foot thrust, its superior capacity to resist unintentional abuse over former treadles is easily recognizable. Furthermore, foot thrust in any direction can be accommodated since the pedal oscillates freely, in not just a single plane, but universally.

DELANY *Flush* VALVES

COYNE & DELANY CO. • 834 KENT AVE. • BROOKLYN, NEW YORK

Since 1879

News of the Month

(Continued from page 164)

district; Thomas A. Marshall as industrial sales manager for the Pacific district, and Dow D. Stone as branch manager for the San Francisco office.

McQuay, Inc., Minneapolis—Bruce L. Evans as representative in the St. Louis, eastern Missouri and southern Illinois areas.

B. L. Evans

J. F. Donnelly

P. M. Hooven, Jr.

Dr. R. L. Jickling

A. O. Smith Corp., Milwaukee—J. F. Donnelly as assistant manager of the Water Heater Division at Kankakee, and F. S. Cornell as group executive over the Water Heater Division at Kankakee, the Heating Division at Toledo and the eastern Motor Division at Tipp City, Ohio.

General Electric Company, Bloomfield, N.J.—Paul M. Hooven, Jr. as sales engineer, defense products sales, air conditioning department.

Bruner Corporation, Milwaukee—Dr. Robert Lee Jickling as chief chemist.

The Hays Corporation, Michigan City, Ind.—Jack J. Tipton as chief project engineer.

American Radiator & Standard Sanitary Corp., Pittsburgh—Roscoe Springston to the staff of the application selling department; Joseph Salamone as general manager of sales; Daniel J. Quinn as sales manager of the plumbing and heating division, and H. M. Carnahan as sales manager of the warm air heating division.

R. Springston

J. Salamone

D. J. Quinn

H. N. Carnahan

Modern Controls Corp., Centerline, Mich.—James V. Burgess as sales manager in charge of dealer, jobber-wholesale and manufacturer contacts.

H. O. Canfield Plumbing Supply Company, Bridgeport, Conn.—Edwin C. Johnson as agent to cover Southern California, Arizona, southern Nevada and the Hawaiian Islands.

J. V. Burgess

E. C. Johnson

F. H. Angier

W. Tucker, Jr.

Republic Heater Corporation, Los Angeles—Col. William H. Tucker, Jr. as executive vice president in charge of coordinating defense manufacturing.

General Controls Co., Glendale, Calif.—Fred H. Angier as district manager for the Philadelphia and Baltimore factory branch offices. His territory includes the District of Columbia, Maryland, Virginia, West Virginia, the eastern half of Pennsylvania, lower New Jersey and Delaware.

Torrington Manufacturing Co., Torrington, Conn.—Dudley B. Robinson as general sales manager.

Temco, Inc., Nashville—Grant Overcash as sales representative for the Dallas, Houston and San Antonio areas.

Monogram Products Company, Inc., Philadelphia—Dan Quinnan as sales representative in northern Illinois, and Robert Clark as representative in Florida and southern Georgia.

The Coroaire Heater Corporation, Cleveland—John E. Bogan as west-divisional manager.

Elections

D. T. Williams Valve Company, Cincinnati—Walter C. Goza as sales manager.

W. C. Goza

G. B. Nelson

Central Plumbing Supply Company, Chicago—George B. Nelson as president.

D. J. Murray Manufacturing Company, Wausau, Wis.—Fred C. Boyce re-elected president. Other officers include: A. W. Plier, executive vice president; M. P. McCullough and D. C. Everest, vice presidents; C. L. Durkee, sales manager; George L. Ruder, treasurer, and W. A. Marquardt, secretary.

Crane Company, Chicago—H. H. Bunchman, V. P. Rumely and S. M. Roberts to the board of directors. Also, C. T. Pollock and F. F. Elliott as vice presidents in the sales division.

Hotpoint, Inc., Chicago—Edward R. Taylor as vice president.

Calument & Hecla Consolidated Copper Co., Boston—Orson A. Rockwell as vice president.

BRIDGEPORT PLUMBERS BRASS GOODS AND NPA ORDER M-12

Copper-base alloys, which are in short supply, are essential in the production of many items urgently needed by our armed services. NPA Order M-12 was issued to conserve copper and to assure that enough of this vital material would be available for defense purposes. The plumbing industry is also affected by this regulation.

PRODUCTION *NOT* PERMITTED BY NPA ORDER M-12—

TRAPS—No. 17 gauge traps, all tubular traps with cleanouts, all No. 17 gauge wall and floor tubes used with cast body traps.

SUPPLIES—All full S.P.S. Basin, Tank and Bath supplies.

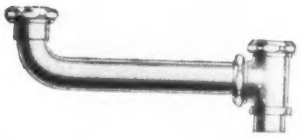
FLANGES—All types.

NIPPLES—I.P.S. all.

CHROME PIPE—All.

SHOWER ARMS—All.

CURTAIN RODS—(Except for permitted hospital use.)



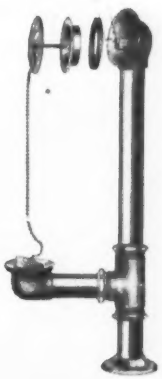
BRIDGEPORT BRASS WILL MANUFACTURE—

We will continue to produce *all items* in the plumbers brass goods line not prohibited by this order in quantities dependent on the availability of copper and brass. This means that we will make No. 20 gauge traps without cleanouts, flexible copper supplies, strainers for sinks, No. 20 gauge tailpieces, bath wastes and overflows, combination sink and tray wastes, and all other items not restricted by Order M-12.

In addition we are planning to produce items of substitute materials wherever possible. For example, flanges and curtain rods will be made from stainless steel in place of brass. Light-wall brass tube may be used for supplies instead of full I.P.S.

State and municipal codes should be changed where necessary to permit the installation of products that can be made in accordance with NPA Order M-12, during the emergency.

We appreciate the cooperation which has been extended to us by our customers during this period, and will do our best to take care of their needs.



"Bridgeport" BRASS CO.

BRIDGEPORT BRASS COMPANY

BRIDGEPORT 2, CONN. • *Established 1865*

Mills at Bridgeport, Conn., and Indianapolis, Indiana • In Canada: Noranda Copper and Brass Limited, Montreal

THE BRIDGEPORT LINE IS CARRIED BY QUALITY-MINDED WHOLESALERS

BRIDGEPORT BRASS

Pipe Welding Techniques

(Continued from page 99)

close this valve and open the oxygen blowpipe valve. Holding the tip-end of the blowpipe in one hand, place the thumb over the end of tip to stop the flow of oxygen. Apply soapy water around the oxygen valve stem, welding head and tip connections. See Figs. 10, 11 and 12.

If the oxygen cylinder valve stem (1 in Fig. 11) leaks, close the cylinder valve and send the cylinder back to the supplier, properly tagged or marked. If oxygen leaks at the regulator-cylinder valve connection (2 in Fig. 11), close the cylinder valve and disconnect the regulator. Clean and check the connections for damage. If damaged or if the leak continues, send it back to the supplier. Leaks at the regulator-hose connection (3) and the blowpipe hose connection (5), can be fixed by disconnecting and cleaning the connection. Reconnect and tighten the nut with an open-end wrench. If damaged, or if the leak continues, replace the unit with new parts.

If the oxygen hose is leaky (4), it should be replaced by a new hose. Don't ever try to tape it. The defective hose can be cut out and the good part spliced with a hose coupling.

To fix a leak in the blowpipe oxygen valve seat (6), shut off oxygen at the regulator. Take the valve apart, clean the end of the valve stem and seat in the valve body, and turn the valve off and on several times. Connect and tighten the valve nut with an open-end wrench. If the leak continues, take the blowpipe to your supplier for repairs. If the blowpipe oxygen valve stem (7) leaks, tighten the packing nut. If it still leaks, shut off the oxygen at the regulator, take the oxygen valve apart and replace the valve packing with *new* packing of the *same* type.

How to Stop Leaks

Should leaks occur at the welding head connection (8), shut off the oxygen, take the connection apart, clean it with a clean cloth, reassemble and tighten the nut with a wrench. If it still leaks, or if the parts are damaged, try another welding head. If the second head doesn't leak, send the first one to be repaired. If both heads leak, send the blow pipe and heads to be repaired.

Next month's article in this series will take up testing for leaks in the acetylene system, give caution notes on the care and use of welding equipment, and show how the flame should be adjusted for cutting and welding of steel pipe.

Fig. 9: Test hose by dunking under normal working pressure. Test hose ends near the blowpipe and regulator with soap suds.

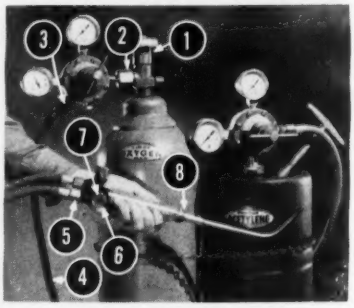


Fig. 11: Test these eight places with soapy water while the oxygen system is under pressure. Tests should be made monthly.

Fig. 12: Test oxygen blowpipe valve and stem for leaks by holding thumb over blowpipe tip and turning on oxygen pressure.

Price Advertising

(Continued from bottom of page 89)

gives him the impression that this article is being sold based upon a definite price."

This opinion finds substantiation in the results of a recent survey of attitudes and habits of retail shoppers made by the New York State Department of Commerce in 30 communities throughout the state.

The survey covered a variety of subjects. But the point on which shoppers expressed the greatest unanimity was the preference (expressed by more than 85 percent) for price tags on products displayed in store windows. It seems safe to conclude, then, that the same thing no doubt holds true for other forms of advertising as well. As one reader puts it, "The customer will pass on to another advertisement if he finds no mention of price in an advertisement that had aroused his interest."

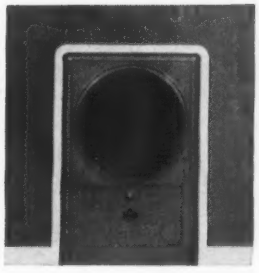
Several of our readers, however, stated that they did not use price advertising . . . some going so far as to indicate that they had had better results from ads that did not carry a price. One such reader, E. E. Demi of Philipsburg, Pennsylvania, cited an ad without a price that had pulled 40 calls the same day it was run, resulting in the item advertised being sold a few hours after the ad first appeared.

One of the chief reasons advanced by readers opposed to price advertising was that, because so much of the merchandise purchased by domestic engineering dealers does not carry a suggested retail price from the manufacturer or wholesaler, there is likely to be a considerable variation in price among

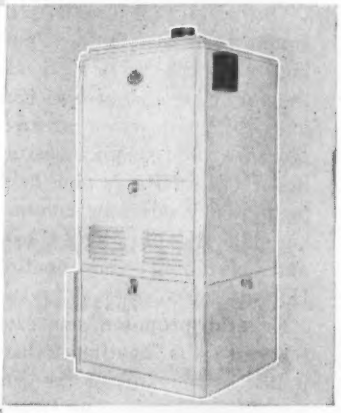
(Please turn to top of page 218)

FIRST IN THEIR CLASSES *for All Gases!*

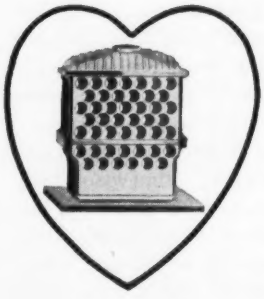
The sensational new **COROAIRE Model 90-WM "IN-THE-WALL"** furnace! Acclaimed by architects, contractors, builders and heating specialists to be the most economical complete heating system for the 3½ to 7 room small home . . . Especially designed for new construction installation . . . Requires no ducts . . . Easy to install as a gas range . . . Patented Venturi Tube Heat Exchanger and completely automatic controls remove this sensational furnace from competition . . . Less to buy—less to run . . . 85,000 B.T.U.



COROAIRE HI-BOY finished in beautiful Hammerloid Blue—a complete winter air conditioner . . . This is the finest Hi-Boy in the country . . . Outstanding performance . . . Unbelievable economy resulting from the Patented Venturi Tube Cast Iron Heat Exchanger . . . And priced competitively for the popular home market . . . 75,000, 85,000 and 100,000 B.T.U.



The nationally famous **COROAIRE Console Model 85-G** heater . . . Ideal for the replacement field . . . One unit completely heats the 3½ to 7 room house or equivalent business space . . . Fully automatic temperature controls! Complete safety controls! Amazing economy results from the COROAIRE Patented Venturi Tube Heat Exchanger . . . 85,000 B.T.U.



TWO MODELS **60-A MANUAL, and 60-B AUTOMATIC . . . HOT BOYS** are the QUALITY SPACE HEATERS for the VOLUME PRICED MARKET!!!. . . PERFECT FOR RURAL and SHORELINE HOMES and COTTAGES! ! ! It is the LEADER in ITS FIELD . . . PERFECT FOR L.P. Gas! 52,500 B.T.U.

Coroaire PATENTED The Scotch Heater

THE COROAIRE HEATER CORPORATION

Products Manufactured exclusively by The Republic Steel Corp.

Dept. DE • 1422 Euclid Avenue • Cleveland 15, Ohio

What's Ahead for Heating Contractors

(Continued from bottom of page 91)

were needed to complete housing facilities for war workers. To avoid a similar condition this time, Mr. Holmes revealed that the NPA has set up a special procedure for designating critical defense areas, in which action may be taken to provide housing and other facilities needed for military personnel and defense workers. Essentially, the procedure permits the Housing Administrator, Raymond M. Foley, to relax credit restrictions in such areas in order to facilitate the construction of needed housing.

Industry Advisory Meetings Held

Outlining the functions of industry advisory committees, Mr. Holmes pointed out that meetings with the NPA have already been held by the following industries: Extended surface heating equipment, warm air furnace, cast iron boiler, hot water and steam accessories and steel heating boiler. The NPA is now in the process of setting up industry advisory committees for oil burners and stokers, plumbing and heating wholesalers and plumbing and heating contractors, Mr. Holmes said.

Several proposed conservation orders of interest to the heating industry are soon to be issued as a result of the work accomplished by these committees. The first will affect unit heaters, unit ventilators, convectors, blast heating coils, baseboard radiation and fintube radiation. This order will have the effect of reducing the number of stock sizes approximately 45 percent. Mr. Holmes reported that manufacturers of this equipment are in complete agreement with the provisions of this order, and that there will be sufficient number of sizes to take care of all requirements.

The cast iron boiler industry, in its advisory committee meetings with the NPA, has proposed (1) the elimination of metal jackets on all cast iron boilers over 1000 sq ft edr capacity and (2) the continuance of metal jackets in either the flush or extended type on boilers up to 1000 sq ft. It was also proposed that tri-cocks and fusible plugs be omitted from all cast iron boilers regardless of size. Mr. Holmes reported that the steel boiler industry has proposed similar conservation orders with regard to jackets.

In describing the various NPA regulations of interest to the plumbing and heating industry, Mr. Holmes said that the following fundamental considerations govern NPA policy in establishing controls:

1—Defense needs have first call.

2—The remaining supplies, after military requirements have been provided for, will be equitably divided among civilian contenders. Under provisions of the forthcoming Controlled Materials Plan (DOMESTIC ENGINEERING, May 1951, page 82), this decision will be made on the basis of essentiality.

3—Industry, wherever feasible, will be consulted in advance of an order affecting its operations.

4—Small business will be encouraged to make its maximum contribution to the defense effort and will be represented on industry advisory committees.

5—Inventories will be held to a practicable working minimum.

6—The right to appeal any regulation is allowed.

In his address to the convention, Wray Scott, of Omaha, retiring president of the association, told his listeners that the defense program will demand an ever increasing volume of new plant construction, and will call for the utmost contribution of facilities and experience from heating, piping and air conditioning contractors. He called on the NPA to avoid placing additional building materials on the restricted list, unless the Controlled Materials Plan shows that such regulations are absolutely necessary.

Harold McGregor, the newly elected president, recalled the experience of World War II, which demonstrated the importance of taking care of the needs of old customers. When this is done, he said, many of them will remain as customers when present restrictions are removed and building is fully resumed by civilian enterprise.

In addition to Mr. McGregor, other new officers elected by the association include William Murray of New York City, as vice president and R. W. Lawinger, of Chicago, as treasurer.

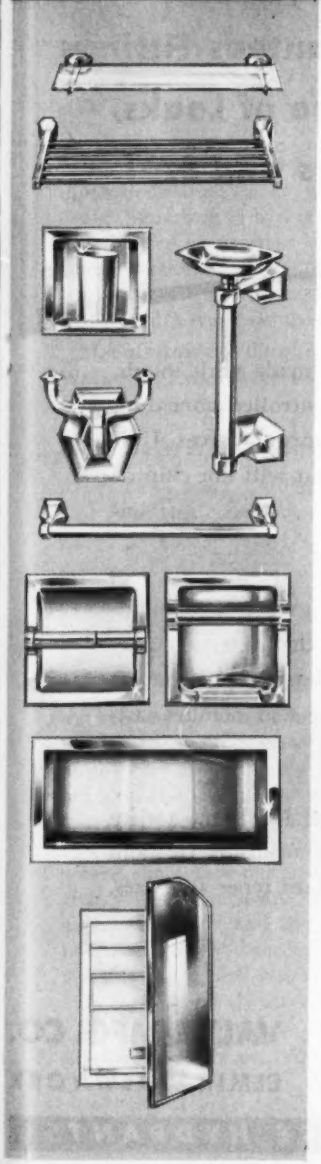
Separation of Contracts

On the subject, "Separation of Contracts", Fred P. Williams, chairman of the Committee on Legislation, reported that it was practically impossible during the past year for his committee to obtain federal legislation requiring separation of mechanical contracts from general contracts, due to "the chaos and confusion which has accompanied wholesale conversion from peacetime activities to national defense." He advised contractors in localities which already have provisions for separate bidding on their statute books to exercise extreme vigilence, otherwise, "any relaxation of watchfulness may result in the loss of those advantages which were acquired at the expenditure of much time and effort and which have been protected against attack year after year."

Several other outstanding reports of interest to heating contractors were given at the convention. A few are summarized on pages 90 and 91, and the balance will be presented in the forthcoming July issue of Domestic Engineering.

for the woman whose bathroom shows

its age and inconvenience



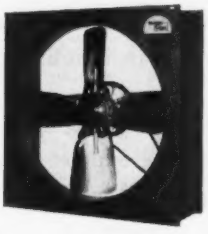
Famous MIAMI-CAREY CABINETS AND ACCESSORIES . . . . . styled and priced for volume sales

the Lady is not alone! *Hundreds* of your customers and prospects are faced every day with the drab looks and inconvenience of outmoded or poorly equipped bathrooms. Help them discover how easy, how economical, bathroom modernization really is . . . with MIAMI-CAREY cabinets and accessories!

You can *bank* on it—MIAMI-CAREY offers the biggest selection of all-steel cabinets, mirrors, towel bars, soap and tumbler holders, light fixtures, crystal shelves and other products. In matching ensembles, smartly designed, bright with gleaming chrome, sparkling glass! And priced for thrifty shoppers or big spenders.

Investigate the profits that await *you* with the MIAMI-CAREY line. See your Carey representative.

HOW TO STIR UP A TORNADO OF SALES!



• Stock, display, sell Miami-Carey kitchen, attic and window-type ventilating fans. Engineered and built to perfection, easy to install, whisper-quiet and dependable. Made in a variety of models to suit every requirement, including "package" types for attic installation. Your Miami-Carey representative is ready with the profit-making facts—see him soon!

From the house of Carey — a complete line of products and materials for home building, modernization and repair

MIAMI

Miami Cabinet Division
The Philip Carey Mfg. Company
Lockland, Cincinnati 15, Ohio

Carey

In Canada: The Philip Carey Co., Ltd., Montreal 25, P. Q.

RIGID KENNEDY INSPECTION

Guarantees Fittings Free of Leaks, Burrs and Scales

KENNEDY MALLEABLE-IRON screwed fittings are made with tough, close-grained iron, tested to 43,000 psi. Carefully controlled annealing prevents splitting or cracking under almost any distortion forces. Uniform hot-dip galvanizing assures a heavy coating that will not chip or flake. Precision machining provides exact alignment . . . speeds installation time.

KENNEDY CAST-IRON screwed and flanged fittings are made with tough, close-grained metal *more than* 50% *stronger* than ordinary gray iron. Precision threading and accurately machined flanges help you get strong, tight joints easily. The complete Kennedy line also includes cast-iron sprinkler and drainage fittings, cast-iron flanges.

KENNEDY BRONZE fittings with tensile strength of 34,000 psi are individually tested to 100 lbs. air pressure under water to insure freedom from leaks. Available rough or polished in all standard types and sizes.

WRITE FOR BULLETIN 104

KENNEDY INSPECTED FITTINGS

THE KENNEDY VALVE MFG. CO.
ELMIRA, NEW YORK

VALVES • PIPE FITTINGS • FIRE HYDRANTS

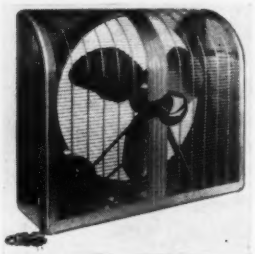
New Products...

(Continued from bottom of page 129)

door wings. The drain is made with a heavy cast-iron body and dura-coated for protection against corrosion; dimensions are such that all sizes of revolving doors can be accommodated.

Manufacturer: J. A. Zurn Manufacturing Co., Erie, Pa.

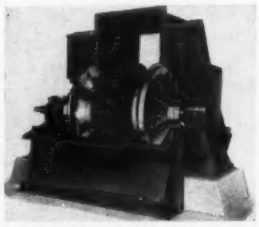
New Propeller Fan



Designed for silent operation, this manufacturer's new 22-inch propeller fan is operated by a quiet-running 110v 60c motor, available in single or two speed models. The fan is reported to have a certified rating of 3100 cfm at 750 rpm. The unit is adjustable to any double-hung sash from 24 in. to 42 in. wide; its overall dimensions are 28½ in. wide, 24 in. high and 10 in. deep. Mounting is a simple operation, accomplished in a matter of minutes with four thumb screws. A streamlined cabinet of slotted metal encases the entire fan and has a baked enamel finish of gray or hammered silver texture.

Manufacturer: Viking Air Conditioning Corp., 5601 Walworth Ave., Cleveland 2.

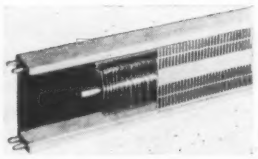
New Type Vane Control



Control of fan output from 15 to 100 percent of full load is reportedly provided by a new type vane control of this manufacturer. Designed for use with fans for mechanical draft, industrial applications and ventilating service, no change in speed of either fan or motor is necessary because vane control changes spin of entering air to modify fan pressure. Four models are available: For light duty; for handling of dusty gas; for industrial applications where gases are free from solids, and for industrial and ventilating service where shaft bearings are supported on fan casing. Heavy steel vanes are welded to tubes that pivot about steel rods, and the rods are supporting members for the cast iron center. The outer supporting member is a rolled-steel inlet flare stiffened to provide rigidity in all directions.

Manufacturer: Westinghouse Electric Corporation, Sturtevant Division, 200 Readville St., Hyde Park, Boston 36.

Baseboard Radiation for Rough-Ins



A new, improved type of baseboard radiation that can be easily and quickly installed on the rough framework of a house or building and the installation completed while all piping is accessible for testing has been announced by this manufacturer. Basically, the unit consists of three parts: back cover, heating section and front cover. The back cover nails directly to the studs or furring strips on new work, and can be recessed or flush mounted on remodeling installations. Dowelled ends assure perfect fit and alignment, and a universal end stop provides matching closure for either end.

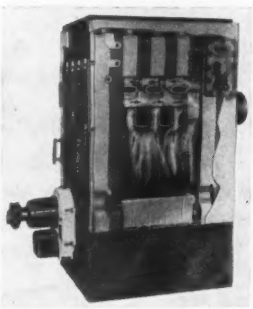
Manufacturer: The Minimite Company, 3700 W. Roosevelt Rd., Chicago.

Capillary Action Thermostat

Development of a proportional action, capillary heating-cooling thermostat for air conditioning control has just been announced by this manufacturer. It is designed primarily for control of the return air temperature in a unit where both the heating and cooling media are regulated by a single valve or damper. The thermostat, equipped with a liquid-filled, remote bulb temperature measuring element, is mounted inside the air conditioning unit, with adjusting knob and dial either concealed or exposed. Temperature limits are 50° to 185°F, with a range of 20°F; it is direct acting at 15 psi and reverse acting at 19 psi supply air pressure.

Manufacturer: Johnson Service Company, 507 E. Michigan St., Milwaukee 2.

Boiler Burner Unit



Vertical water tube construction that is reported to assure a positive rapid water circulation in the boiler and a maximum heat absorption are just two of the features of this manufacturer's new boiler burner unit. Other features include: Tight fitting flue doors to prevent air leakage and aid good combustion; the use of Mills flue travel to provide more heating surface and greater heating efficiency, and gray iron construction to assure trouble-free, long life. Net IBR rating, Btu/hr 162,000 to 306,000.

Manufacturer: H. B. Smith Co., Inc., Westfield, Mass.

(Please turn to top of page 174)

New Products

(Continued from bottom of page 173)

Aspirating Air Diffusers

A new line of high-pressure, aspirating air diffusers (Type HPW-1) was announced recently by this manufacturer. The units are available in three sizes: No. 15 rated at 80 to 170 cfm primary air capacity at .5 to 2.35 wg static pressure; No. 17½ rated at 105 to 222 cfm at .68 to 3.1 wg, and No. 20 rated at 145 to 312 cfm at .7 to 3.2 wg. With a pre-induction type design, the unit induces room air, mixes it with primary air in approximately equal proportions and discharges the mixture through an aspirating air diffuser. They can be used on air distribution systems which carry air at velocities up to 5000 fpm and static pressures up to 6 in. wg; high temperature differentials can be handled and the difference between primary air and ambient of room air is limited only by dew point to avoid condensation. Air volume can be manually or automatically controlled.

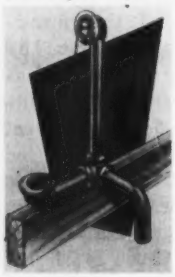
Manufacturer: Anemostat Corporation of America, 10 E. 39th St., New York.

Valve Actuator Line

Designed for operation of gate valves, plug valves, dampers, diaphragm valves, butterfly valves and sluice gates is a line of valve actuators just introduced by this manufacturer. The units are equipped with brackets, valves, controls and couplings to make them suitable for almost any type of operation required according to reports. They can be adapted to any make, size and type of valve; to operate against any line pressure; to work on any fluid medium and with any pressure available.

Manufacturer: Ledeen Manufacturing Co., 1602 So. San Pedro St., Los Angeles 15.

3-Way Offset Tee



A new 3-way offset tee reported to eliminate rafter or beam sawing is now being produced by this manufacturer. The unit can be used for either right or left hand or 45 deg angle installations without any major effort or adjustment. Made of brass with chrome facings, it is available in the standard plug and drain model, or a dial trip waste version.

Manufacturer: Frost Co., Kenosha, Wis.

Heavy Duty Water Softener

A heavy duty water softener ideal for medium sized industrial applications has just been announced by this manufacturer. This new 600,000 GR capacity commercial model is in between the firm's large custom size models and its smaller units. It is also available as a twin unit with up to 1,200,000 GR capacity. The unit contains an automatic backwash control which reportedly assures complete cleaning of the zeolite at low water pressures, yet guarantees against loss of mineral at high city pressure. The control has no moving parts.

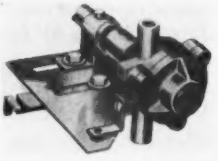
Manufacturer: Bruner Corporation, Milwaukee 45.

Packaged Air Conditioning

Five packaged models for air conditioning stores, markets, restaurants, offices and other spaces are now being produced by this manufacturer. Improved both functionally and in appearance, the units are available in 3, 5, 7½, 10 and 15hp sizes. All models are readily adaptable to either plenum or duct air distribution. Heavier horsepower fan motors have been provided on the two large units to handle the relative high static pressures of duct distribution systems. A new drive assembly providing increased fan speeds has also been made available as an optional feature of these two models. Insulated with fibreglass for quiet operation, all units are equipped with hermetic, spring-mounted compressors, sealed against dirt, moisture and air.

Manufacturer: Carrier Corporation, Syracuse, N.Y.

Evaporative Cooler Pump

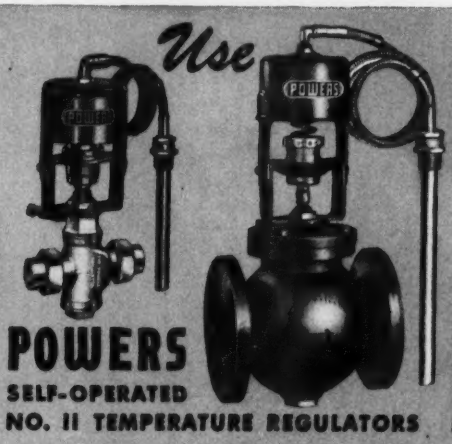


A recent development is this self-priming evaporative cooler pump which takes its driving power from the blower motor, thus eliminating the need for an independent pump motor. This feature should be of particular interest for installations depending on three-phase, 440v, or low-cycle a-c power. Capacities of the new pump vary between 105 gph at 500 rpm and 240 gph at 1160 rpm. Reports show that these delivery rates are in excess of evaporation requirements, thus assuring even distribution of water over the pads. Unit is supplied with or without installation kits and special control valves for varying installations.

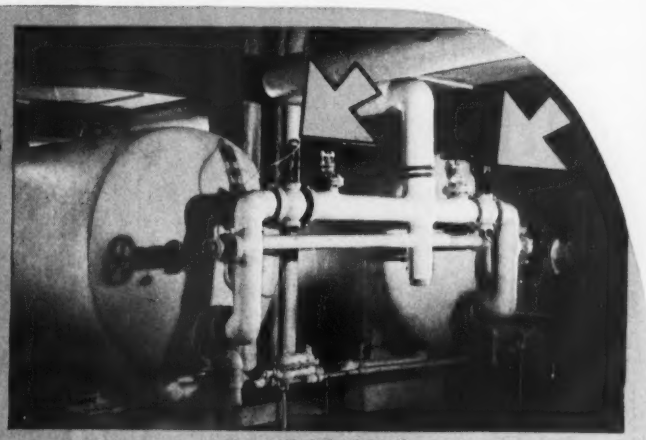
Manufacturer: Jabsco Pump Company, Burbank, Calif.

(Please turn to top of page 177)

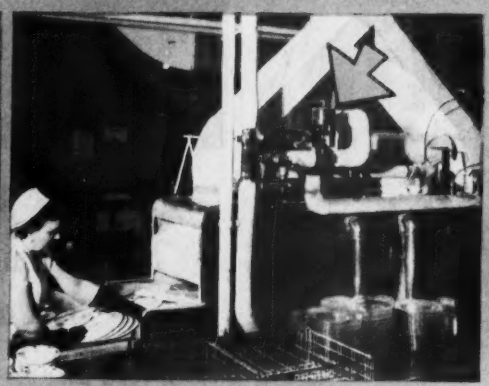
For BETTER TEMPERATURE CONTROL



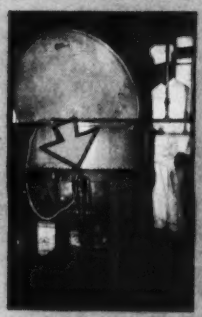
POWERS
SELF-OPERATED
NO. II TEMPERATURE REGULATORS

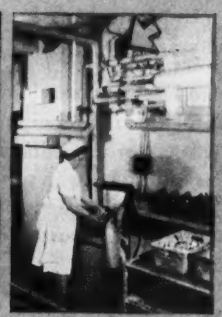


Above: WATER HEATERS

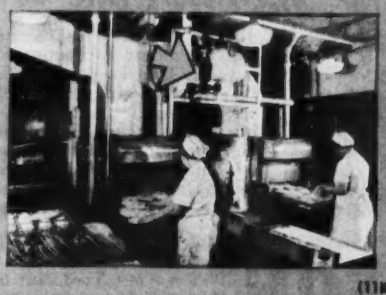


Left: STEAM TABLE—*Center:* DISHWASHER—*Right:* COFFEE URN





COOKING KETTLE • SILVERWARE WASHER
Below: DISHWASHER



(11KTR)

POWERS

No. II Regulators Save Fuel—Prevent Over-heating!

Quickly Pay Back Their Cost in economies of time, labor and fuel saved.

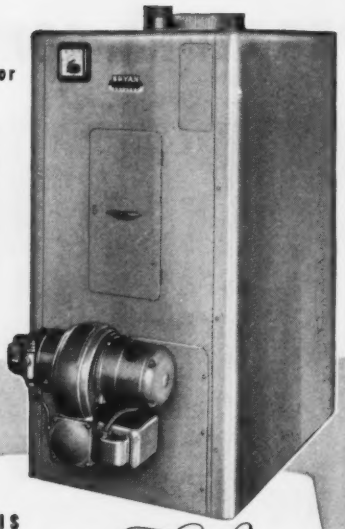
Most Simple and Dependable type of regulator made for uses shown here. Special Features: Has over-heat protection; valve stem lubricator and oilite bearing on temperature adjustment. Often gives 10 to 25 years' service.

Contact our nearest office for prices and help in selecting the right type and size for your requirements. There's no obligation. CHICAGO 14, ILL., 2720 Greenview Ave.—NEW YORK 17, N. Y., 231 E. 46th St.—LOS ANGELES 8, CALIF., 1808 W. 8th St.—Toronto, Ont., 195 Spadina Ave.—Mexico, D. F., Apartado 63, Bis.

THE POWERS REGULATOR CO.
OFFICES IN OVER 50 CITIES • SEE YOUR PHONE BOOK
60 Years of Water Temperature Control

Designed Especially for

GAS or OIL



THIS Copper Tube

BRYAN BOILER

Acclaimed by Heating Engineers

Talk to any competent and impartial heating engineer who has had an opportunity to study the operation and performance of Bryan Copper Tube Boilers. He will tell you that the Bryan is "tops".

The Bryan is engineered to take full advantage of the high heat transfer rate of copper—several times that of iron. When this advantage is added to other inherent structural features, the Bryan is easily at the head of anyone's list.

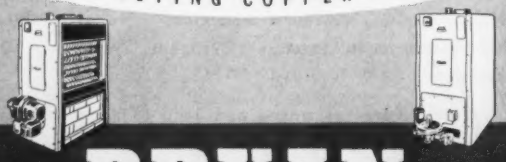
Domestic models range from 70,000 BTUs to 1,580,000 BTUs per hour. They are made for hot water, steam or radiant panel heating. Some models available for early delivery.

Write for details

BRYAN STEAM CORPORATION

561 Chili Pike Peru, Indiana

FAST ACTING COPPER TUBES



BRYAN Copper Tube BOILERS

Appliance Service Organization Saves Time and Money with Klixon Protectors

CHICAGO, ILL.: Russell J. Hickmon, superintendent for Walter C. Stutman & Company, a leading independent appliance service organization, states that KLIXON protectors have been saving him time and trouble for years.

"In the years I've been servicing refrigeration, air conditioning and heating equipment, I have found that KLIXON protectors eliminate motor burnouts completely. This simplifies our service work and promotes good will, not only between customers and our organization, but between customers and the appliance manufacturers."

Manual Reset

Automatic Reset

Klixon Protectors Reduce Service Calls and Repairs by Preventing Motor Burnouts

The Klixon Protectors illustrated are built into the motor by the motor manufacturer. They keep motors in such equipment as refrigerators, oil burners, washing machines, etc., working by preventing the motors from burning out. Reduce service calls, minimize repairs and replacements by specifying that equipment has motors with Klixon Protectors.

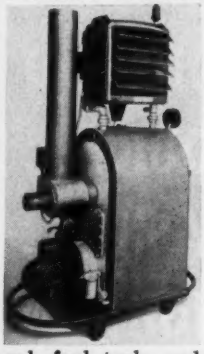
KLIXON TRADE MARK REG. U. S. PAT. OFF.

SPENCER THERMOSTAT

Division of Metals and Controls Corp.

1806 FOREST STREET, ATTLEBORO, MASS.

Portable Steam Space Heater



Suitable for heating large confined spaces is a new, fully automatic, oil-fired, portable steam space heater. The burner guns are equipped with catomic adjustable turbulators to give efficient combustion. A forced-draft device works regardless of draft conditions, and it is as automatic as any permanent heating plant. Consumption is 1½ gals. per hour of No. 2 fuel oil from its 30-gal. fuel tank, and heat output is regulated by a thermostat on extension cord. Mounted on rubber-tired castors, the unit is easily moved. To operate, plug into any 110v electrical outlet.

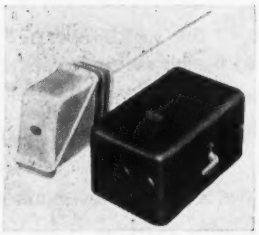
Manufacturer: Quiet Automatic Oil Burner Corporation, 33 Bloomfield Ave., Newark, N. J.

Room Air Conditioner

A ¾-ton room air conditioner is the latest addition to this manufacturer's line. Handsomely styled in rich walnut finish, the unit is reported to cool, dehumidify, circulate, ventilate and filter, completely conditioning up to 400 sq ft. According to laboratory tests, the air conditioner delivers full rated capacity of 9000 Btu per hour. The unit is simply installed in any double-hung window 27 in. wide or wider, and operates economically on a minimum of current.

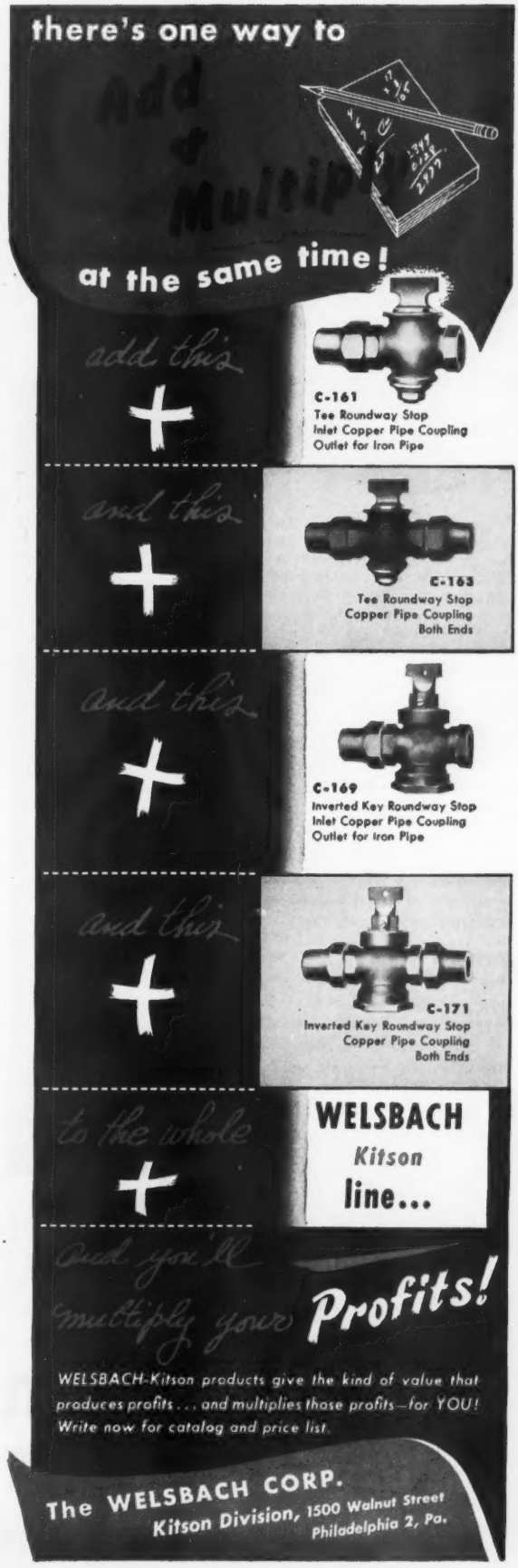
Manufacturer: American Stove Company, 1641 S. Kingshighway, St. Louis 10.

Combustion Safeguard for Gas Burners



This manufacturer announces a new system providing flame-failure protection and programming for industrial and commercial automatic gas burners. The equipment includes a programming control type and an electronic flame-rod type. The first type automatically starts and programs the sequence of purging blower motor and ignition fuel-valve opening, and post-ignition timing. Fuel-valve delay and post-ignition periods can be easily set upon installation, and a calibrated dial clearly indicates the timing adjustment in seconds. The second type will not allow the main gas valve to open until the pilot flame is established and detected. If the flame fails, the flame rod signals the control, which instantly cuts off fuel. The control can be wired to operate an alarm upon flame failure.

Manufacturer: Combustion Control Corporation, 77 Broadway, Cambridge 42, Mass.

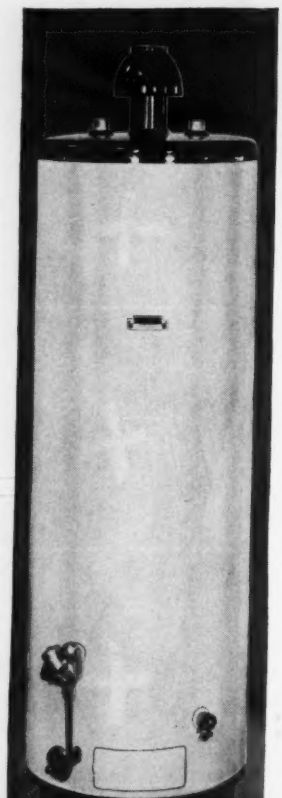


CHALLENGE Heaters

...Meet Today's CHALLENGE in Dealer-Consumer Demands

BY THE SAME MANUFACTURERS OF THE FAMOUS

WILSHIRE heaters



Yes, CHALLENGE is Your Answer to today's government controls on water heaters. Comparably, it offers equal quality and unquestionably the same high standard of workmanship as that of its predecessor, the Wilshire Heater. It is safe to say that CHALLENGE, true to government specifications, is abreast of the best in water heaters.

SPECIFICATIONS

Tanks are of heavy gauge, electrically welded, high quality steel, *corrosion-proofed* after fabrication with pure virgin zinc. The zinc coating is laid down through an exclusive process developed by Southern Heater Corporation.

Economical burners in single or multiple clusters with flue to match. Every CHALLENGE Water Heater is heavily insulated and equipped with a precision snap-action thermostat which maintains a constant temperature and automatically releases hot water at the touch of a faucet.

Nine popular sizes: 20, 30, 40, 55, 55HR, 75, 75HR, 100 and 100HR gallon capacities.

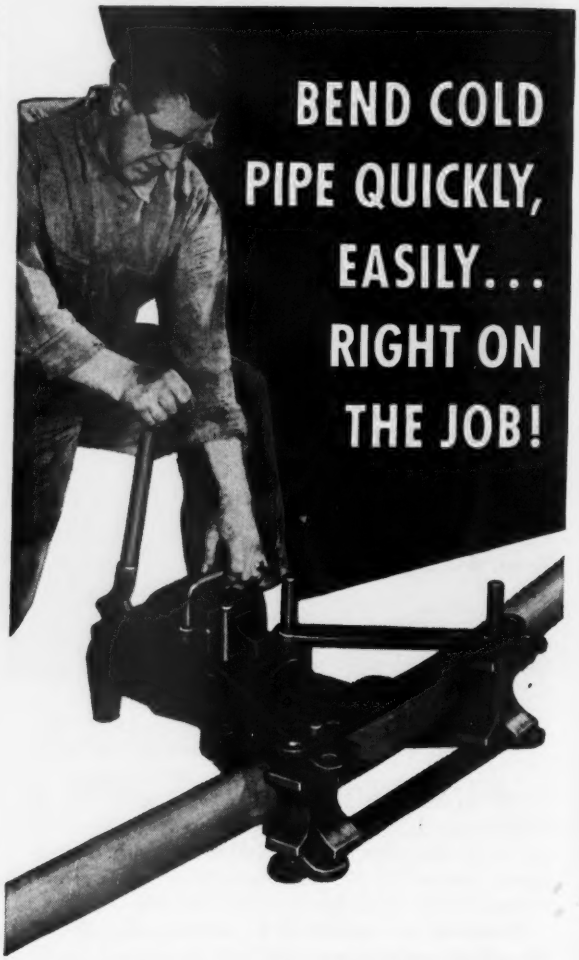
GUARANTEE

The quality of the CHALLENGE Water Heater line is warranted by manufacturer's 5 year prorated tank guarantee on residential installations (one year in commercial installations).

WRITE FOR DESCRIPTIVE LITERATURE TODAY!

Southern Heater CORPORATION

133 E. Palmer Ave. Compton, Calif.



with a GREENLEE HYDRAULIC BENDER

Yes, make pipe bends "right on the job"... exactly where and when you need them! And do the job swiftly, accurately with a GREENLEE Hydraulic Pipe Bender.

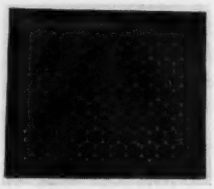
Bends pipe up to 4½". Simple to operate, easy to carry, set up and shift from job to job. With a GREENLEE *one man* makes smooth, precise, uniform bends in but a few minutes. Speeds your piping installations, cuts costs on labor and materials. In timesavings alone, the GREENLEE pays for itself quickly.

Ideal for radiant heating jobs, too. For complete details write for free Bender Booklet E-201. Greenlee Tool Co., Division of Greenlee Bros. & Co., 2366 Twelfth Street, Rockford, Illinois.

TOOLS FOR CRAFTSMEN

GREENLEE

New I.S. Air Filter



A new air filter designed to eliminate dust and dirt in all central heating, ventilating and air conditioning systems was recently announced by this manufacturer. A greatly increased clean air efficiency is claimed, and the unit has the standard impingement filter pad of the company's regular line, in addition to a bonded industrial mat on the down stream side of the filter.

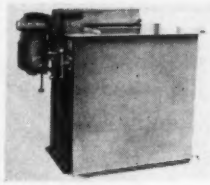
Manufacturer: Glasfloss, 155 E. 44th St., New York.

Lavatory Diverter Fitting

Replacement of seat washers can now be done in a jiffy on this manufacturer's new diverter. According to reports, the new design permits the valve stem to come out in front; after removing the trim, the stem is easily lifted out. This eliminates chipping away at tile and plaster. Ultra modern streamlined design has made this unit adaptable for all modern bathrooms. It is unusually simple to install and clean, and fits into any wall from 3 to 6 inches. There is an extra wide adjustment of 3½ inches to allow for roughing in, plastering and tiling.

Manufacturer: Harcraft Brass Division of Harvey Machine Co., Inc, Los Angeles.

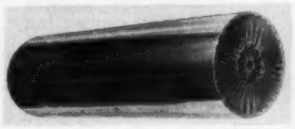
Sheet Metal Slitter



Reportedly ideal for the plumbing or heating contractor with his own sheet metal shop is the newly announced sheet metal slitter of this manufacturer. With a capacity of 16-gage, it will cut to the center of a 36 in. sheet and feeds at the rate of 68 feet per minute. The machine is reported to be of extremely rigid construction, and is designed to give years of trouble free service. One of its features is a method of adjusting the cutter head for width. The gage remains stationary and the cutter is removed, thereby allowing the user to stack material on the gage line without changing the position for cutting different widths.

Distributor: Price & Rutzebeck Distributing Company, P.O. Box 30, Hayward, Calif.

Longitudinal Fin Tube



Recently released is this longitudinal fin tube designed for a high rate of heat transfer of liquids and gases with a minimum of pressure drop. The unit is available with one or two finned annular spaces with outer tubes of ⅝ to 2⅛ in. Standard tubes are of copper with copper or aluminum fins, and have lengths up to 10 ft.

Manufacturer: Heat-X-Changer Company, Brewster, N. Y.

SHOWER SAFETY

. . . No scalds . . . no chills. Protects against *both* sudden scalds *and* chills. Even with pressure fluctuations up to 85%, *Safetymix* keeps shower temperature constant. Automatically shuts down flow when either hot or cold water fails.

LIFETIME QUALITY

. . . Only one moving part. Designed and manufactured by engineers and approved by architects, pressure-actuated *Safetymix* is the most rugged shower control valve made. Only *Safetymix* has the patented Flow Control Spindle with but one moving part to control *all* valve functions.

FREE FROM MAINTENANCE

. . . Easy to fix as a faucet. Safetymix is designed with self-cleaning action to prevent clogging. Saves water. All parts accessible from front.

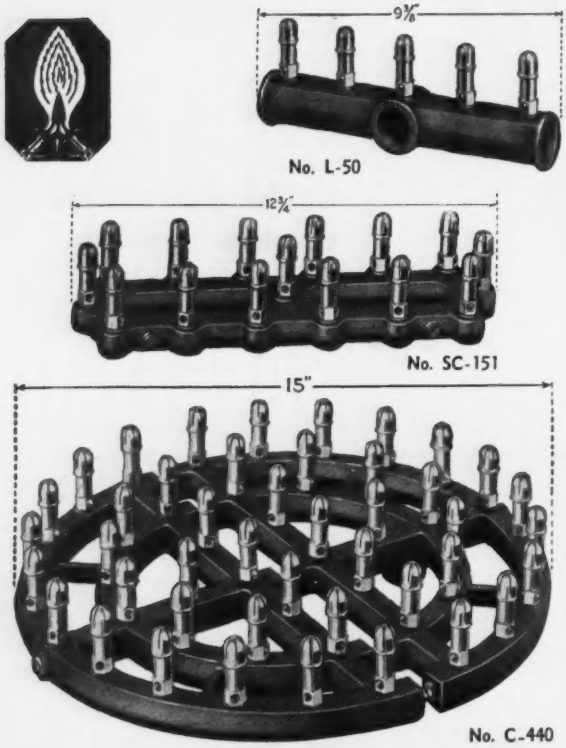
COSTS NO MORE

Because it costs no more than ordinary shower valves and is guaranteed to be entirely as represented, architects specify Safetymix and engineers recommend it. Safetymix gives the extra safety and satisfaction that builds better reputations. Safetymix is used in thousands of schools, colleges, hotels, industrial plants, institutions and better homes from coast to coast.

See Sweets Architectural File or your Domestic Engineering Catalog.

Send for bulletin and prices.

Symmons
ENGINEERING COMPANY
[illegible] BOSTON



BARBER

Appliance Burner Service Is Worth Looking Into!

For a third of a century, Barber has been widely recognized for superior quality in gas conversion burners, and also in burner units for many other types of gas appliances. For the past 10 years or more, Barber has increasingly commanded the quality market for *appliance burners,* in numerous types of gas-burning appliances. There must be reasons for this. There are.

Barber has devoted a major portion of its research, testing, and development facilities to the job of creating and perfecting the *exactly* proper burner unit to fit the gas appliance involved. That's because the burner is the *heart* of the appliance. In shape, size, and type of jets, the burner *must* suit the appliance, for the appliance itself to perform at par. Thus Barber is able to design, test, and then build hundreds of types of gas burner units (for all kinds of gas) that are expertly *engineered* for the individual appliance. In short, Barber has become BURNER UNIT HEADQUARTERS for hundreds of appliance makers, who rely on Barber to take care of their burner problems. Where else can any appliance manufacturer avail himself of an equal degree of burner experience and resourcefulness? Buy Barber and you buy the best.

Write for latest Catalog showing all models of burners for Appliances, also Conversion Burners and Controls.

THE BARBER GAS BURNER CO.
3706 Superior Ave., Cleveland 14, Ohio

BARBER *Automatic* JET GAS BURNERS

Time Saving Solder Flux

A liquid soldering flux reported to eliminate practically all cleaning and burnishing of metal parts was recently announced by this manufacturer. Application by brush is not necessary as the container is so designed that a gentle squeeze directs a fine stream of the flux onto the parts to be soldered. It can be applied to seams, joints and bushings and on all metals including copper, brass, bronze, nickel, cadmium, zinc, tin, galvanized iron, steel and monel.

Manufacturer: Division Lead Company, 836 W. Kinzie St., Chicago 22.

No-Brush Painting

Just shake the can and spray. Recently released by this manufacturer is a new paint that requires no brush, no mixing, no compressor, no clean-up. According to reports, it is ideal for painting or touching up radiators, boilers, water heaters, convectors, furnaces, fin pipes, oil burners, etc. All cans are furnished with a guaranteed non-clogging spray valve, and coverage is reported to be 100 sq ft for each 12 ounces. Colors available are chrome aluminum, white, black, meadow green, red, medium gray, royal blue, ivory, gold and clear plastic.

Manufacturer: Champion Bronze Powder & Paint Company, Inc., 2526 W. Van Buren, Chicago 12.

Save time with a
WARNOCK
STRAP WRENCH

avoid scratching polished pipe

Flexible woven strap provides soft contact but strong grip . . . curved nose prevents denting . . . handle unbreakable.

There are two models in many sizes. See these time and money savers at your wholesalers today. Ask him also about the handy Warnock Strap Vise.

LOWELL WRENCH CO.
WORCESTER 8, MASS.

IN PIPE AND BOLT THREADING—

SPEED

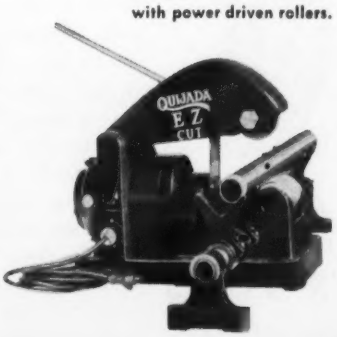
IS THE OTHER NAME FOR

QUIJADA

QUIJADA "CHIEF" ½-2" Portable Pipe & Bolt Threader.

• QUIJADA has *SPEED* on the job. Paying attention to this fact puts more money in your pocket. That's one major reason why old users don't give up their QUIJADAS. Automatic action—safety—speed—accuracy—portability—long life—THAT'S THE QUIJADA STORY.

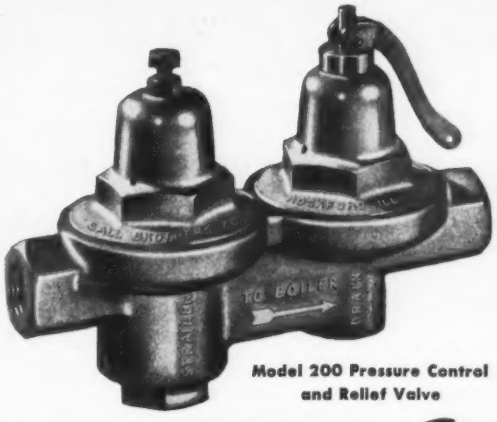
QUIJADA "E-Z" Cutter. The pipe and tube cutter with power driven rollers.



Sold by your Jobber. Don't hesitate to write factory for details and special information.

QUIJADA TOOL CO., INC.
5474 ALHAMBRA AVENUE
LOS ANGELES 32, CALIF.
SOLD ONLY THROUGH JOBBERS

FOR ALL HOT WATER HEATING SYSTEMS



Model 200 Pressure Control and Relief Valve

FLOW FITTINGS BY *Sall*

Available in Cast Iron or Copper

SALL Fittings greatly improve the efficiency of the entire hot water system. One fitting on the return line is all that is needed. This directs the free flow of the water through the radiator. SALL Fittings are applicable to both cast iron and copper radiation.

SALL one pipe fittings are available in either cast iron or copper. Sweat type for use with copper tubing.

All sizes 1" to 2" upfeed return or down-feed return.

ANGLE FLOW CHECK VALVE

Designed for one and two pipe systems, the SALL Flow Check Valve performs its function unfailingly. Automatic in operation, but when necessary can be locked in position for gravity circulation. Small ½" port at top permits installation expansion tank, preventing air-binding. Learn more about the complete SALL Line . . . get in touch with your SALL representative.

SALL Brothers COMPANY
2320 KISHWAUKEE ST., ROCKFORD, ILL.

Unlock the Profits!
THEY'RE WAITING IN EVERY GENERAL FUEL OIL FILTER

GENERAL FILTERS *Says:*

Install a Genuine General Filters Replacement Cartridge For Your General Customers at Least Once Each Season

Remember! *The few minutes you spend installing a new cartridge during a service call means profit for you—and these advantages for your customers:*

- ✔ CLOGGED NOZZLES ELIMINATED
- ✔ ALL-WOOL CARTRIDGE
- ✔ FINE FILTRATION
- ✔ CONDENSATION MOISTURE REMOVED
- ✔ WIRE MESH STRAINER INSIDE WOOL GIVES DOUBLE PROTECTION

GENERAL FILTERS now distributes CLEAN RIGHT SOOT REMOVER— Certain-safe for oil, gas, or coal heating plants. Tell your customers about the NEW way to heating efficiency.

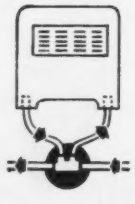
GENERAL FILTERS INCORPORATED

GENERAL FUEL OIL FILTERS

12890 WESTWOOD AVE. DETROIT 23, MICHIGAN

CANADIAN FACTORY BRANCH: CANADIAN GENERAL FILTERS, LTD. 2679 DANFORTH AVE., TORONTO 13, ONTARIO

SAVE LABOR & FITTINGS with the *Master-Dual-Flow*
(PATENTED)



Diagrams Above Show Various Ways Of Installing The Master-Dual-Flow.

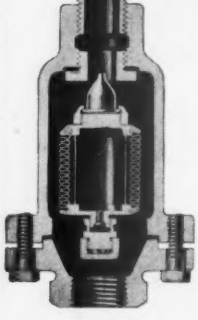
1 Master-Dual-Flow Does the Work of 2 Fittings!

Master-Dual-Flow fittings are designed for one pipe forced hot water systems. Since there are no arrows to follow, Master-Dual-Flows are always installed correctly regardless of position of fittings or radiator location. Master-Dual-Flows cut threading and sweating time, reduce installation costs, increase profits per job. Available in bronze and cast iron.

AGENTS! Write Today for Territories

THE MEL PRODUCTS CO.
MANUFACTURERS
554 CHAPEL STREET NEW HAVEN, CONN.

AIR VENTING
for Industrial Equipment—



SARCO THERMOSTATIC AIR VENTS

Steam using equipment cannot operate efficiently unless air is constantly removed. This applies particularly to the starting period when the equipment is full of air, and to the constant addition of air introduced with the steam.

Simple, inexpensive Sarco air vents can eliminate this difficulty, but they must be applied at the right points on the equipment or the lines. Complete information is available in Catalog No. 275-A.

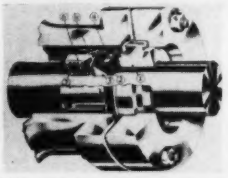
296

SARCO SAVES STEAM

SARCO COMPANY, INC.
Represented in Principal Cities
Empire State Building, New York 1, N. Y.
SARCO CANADA, LTD., TORONTO 5, ONTARIO

IMPROVES PRODUCT QUALITY AND OUTPUT

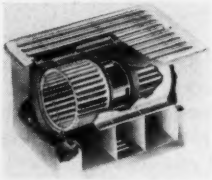
Anti-Corrosive Mechanical Seal



A new, improved mechanical seal, reported to perform effectively under severe temperature and corrosive conditions, has just been released by this manufacturer. Incorporating a flexible ring molded from a new plastic, this "wedge ring" enables the seal to combine the chemically-inert properties of the plastic with the flexibility and positive sealing components essential to effective mechanical sealing. The set-screw retainer provides a positive drive from shaft to carbon sealing washer; the seal is insured by the plastic ring. Spring pressure keeps the faces in constant contact providing automatic adjustment for wear and shaft end play.

Manufacturer: Crane Packing Company, 1800 Cuyler Avenue, Chicago 13.

Ceiling Ventilator for Kitchens



A ceiling model ventilator for kitchens and all small rooms up to 1000 cu ft, and which incorporates dual blower wheels and interchangeable horizontal and vertical discharge has just been announced by this manufacturer. The unit develops a certified 300 cfm using a 1/30 hp motor; this relatively slow speed permits quiet air movement. The new features of this unit include interchangeable discharge while on the job from horizontal to vertical. The unit is 7¼ in. high, allowing easy installation within 8 in. of joist spaces. The blower assembly is quickly installed in the housing by means of clamps while the grille is easily installed or removed by two thumb screws.

Manufacturer: Trade-Wind Motorfans, Inc., 5725 S. Main St., Los Angeles 37.

Gage Valve with Male Inlet

A forged steel gage valve series in the half inch size with a male inlet and female outlet was just released by this manufacturer. According to reports, overall compactness of the unit makes it highly desirable for cramped areas like in instrument piping or for installation on manufacturer's equipment. The valve also features a safety taper threaded joint between the body and bonnet which prevents the bonnet from backing out of the valve due to vibration. The wall thickness of the male inlet is extra heavy for high pressures and is reported to provide greater protection against breaking-off or rupturing. Other features include a backseating shoulder for repacking under pressure, extra broad seat joint for tight closure and bonnet and packing nut plated to reduce possible galling and corrosion.

Manufacturer: Edward Valves, Inc., East Chicago, Ind.

Koven
WATERFILM
the fastest steaming boiler on the market!
Quick Heat at Low Cost
Think what that means to your customers . . . quick heat . . . less fuel consumption! The modern scientific improvements incorporated in the patented construction of Waterfilm Boilers provide comfort and trouble-free long life operation. Handsomely jacketed, Waterfilm Boilers are available in sizes suitable for heating homes, apartment houses and industrial plants. For large installations, the sectional Waterfilm Boiler is the only boiler that can be taken through a two-foot door. 500-17,850 E.D.R. For small homes, we recommend the Venko tuck-away boiler. NATIONALLY ADVERTISED. Write today for free literature and newspaper mats.
THE HEART OF THE WATERFILM BOILER IS THE ZIG-ZAG SHAPED WATER TUBE
WATERFILM BOILERS, Inc.
A Division of L. O. Koven & Bro., Inc.
154 Ogden Ave., Jersey City 7, N. J.
Plants: Jersey City, N. J. Dover, N. J.
EVEN ROOM TEMPERATURE THROUGHOUT THE HOUSE!
FOR AUTOMATIC FIRING WITH OIL, STOKER OR GAS

Hard-hitting ads in leading magazines like "American Home" and "Better Homes and Gardens" tell your customers these facts: faucets with Spring-Flo Aerators give oxygen-enriched water that tastes better, a bubbly stream that washes and rinses faster, saves soap and is non-splash.

These ads will help you sell faucets with the Spring-Flo. Remind folks that you handle faucets fitted with this amazing patented aerator. They'll help you sell other goods, too, because a satisfied customer comes back.

Spring-Flo Aerators are supplied with the lavatory and sink faucets of all leading faucet manufacturers.

SPRING-FLO® AERATOR

SELL

A CHASE PRODUCT CHASE

The greatest thing in faucets

CHASE BRASS & COPPER CO.

Evaporative Air Cooler Line

A line of evaporative air coolers that range from midget to giant size was just announced by this manufacturer. Starting with a 1000 cfm pour-in model and progressing to the 20,000 cfm blower model, according to the manufacturer there are units for single rooms, offices, small homes, large homes, retail stores, factories, commercial buildings of all types. Pour-in models provide practical installations for offices or rooms off the ground floor, as well as trailers, since the recirculating pump keeps water flowing through the cooler without the need of a constant water source. In all models, cooler parts literally float, since they are isolated from the cabinet by rubber cushions. They are also rust-resistant and corrosion proof materials are used throughout.

Manufacturer: Palmer Manufacturing Corp, Phoenix, Ariz.

New Root Destroyer

Just released by this manufacturer is a root destroyer that, according to reports, requires no digging, mixing, stirring or any other method of preparation. Slow-dissolving crystals of this new root killer assure maximum effectiveness, and are not dissipated in the sewage but quickly reach the roots intact. Absolutely safe to handle, it does not expose the user to the danger of burns, gases or other reactions. A concentrated compound of crystals and fine powders, it is easily applied through the bowl of the water closet or directly into the sewer—straight from the container.

Manufacturer: Hercules Chemical Company, 332 Canal St., New York.

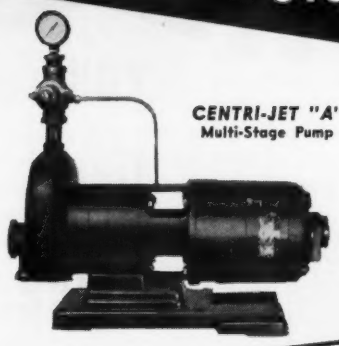
Gas Fired Boiler

A new line of compact and efficient gas fired hot water boilers for heating homes from six rooms and up was recently announced by this manufacturer. A reported extremely overall small size makes the units ideal for present day new and remodeling requirements where compact floor plans involve space limitations. Sections are made of cast iron with integral baffles which provide maximum heat absorption before reaching the stack. Wet base design is used so the burner chamber is entir 'y surrounded with hot water to assure maximum heat transfer differential at the point of highest heat concentration. Units are available in six, eight, ten and twelve section sizes with hot water net ratings of 355 to 670 sq ft.

Manufacturer: Dunkirk Radiator Corporation, Dunkirk, New York.

It's RED JACKET in '51

FOR A COMPLETE LINE OF PUMPS AND WATER SYSTEMS



CENTRI-JET "A"
Multi-Stage Pump

FOR HOME, FARM and INDUSTRY

Now you can depend on a single source of supply for your pump requirements. Now you will be able to offer from Red Jacket's complete selection, a pump that will meet the needs of over 90% of your trade. The new Centri-Jet "A" model shown above is just one of the many modern, quality-built, compact, service-free groups in this great extensive line.

THE CENTRI-JET "H" LINE

This new line of single-stage horizontal type injector pumps is a companion line to the multi-stage units above. Included are design and operation features that make this line of pumps the most economical to install and operate with a minimum of service and maintenance.

THE RED JACKET - REDA LINE

Here is the latest in pumping equipment, the new "Submerga-Pump." The pump that is completely submerged in the well — out of sight. Pump and motor are close coupled and are lubrication free. Available in a wide range of sizes for wells as small as 4" in diameter. The pump you don't see — can't hear — never lubricate. Requires only one small pipe from pump to tank.

RED JACKET
water service products

Write for catalog showing complete line, range of sizes and prices. Address Dept. DE.

RED JACKET MFG. CO.
DAVENPORT, IOWA
"The Choice That Makes Friends" Since 1878

1st choice with master plumbers

LAVELLE Master Kit

- Heavy Serviceable Steel Box—Ideal for re-use purposes
- 200 washers
- 7 Sizes

Here's the world's handiest assortment for the Master Plumber. Features the right size, the right washer for every job. Your choice of assorted N-Dur-O's, Acme's, or Black Diamonds. Extra profit opportunities in every service call with the Master Kit.

LAVELLE Dandy Tank Balls

An outstanding performer! Here's why . . .

- carefully designed, scientifically constructed from tough black rubber compound
- soft seat adapts to all types of valves
- alkali-resistant and will not swell under normal usage. Master Plumbers rely on the Dandy every day.

"SEALED IN"
Packaged in factory-fresh, tamper-proof carton.

LAVELLE Rubber Company
428 NORTH WOOD STREET • CHICAGO 22, ILLINOIS

WATER-HOTTER"

(GAS AND ELECTRIC AUTOMATIC WATER HEATERS)

Guaranteed by Good Housekeeping

GAS Round models only

See the wealth of NEW sales promotion material White now provides!

Best of all sales-power is a good product—and *White* dealers enthusiastically praise WATER-HOTTERS for their many proved, easily showable points of superiority. But in addition to a nationally advertised product you'll be proud of, *White* also offers you a wealth of new, potently attractive sales promotion material—and a Proved Profit Story that points your way to more money. Ask your *White* distributor or mail coupon TODAY!

6.9% MORE hot water

than utility requirements because White's INSTANT-HEAT Immersion Units are super-efficient and White's EXCLUSIVE Water-Hotter baffle diffuses and tempers incoming cold water.

Film of Flame

No small holes here, to clog and cause wasteful combustion and slow heating. Instead, one wide-open port, designed on the "WATER-HOTTER" diffusion principle . . . a Film of Flame which bathes the tank bottom in flame-tips.

WHITE PRODUCTS CORPORATION

Water Heating Specialists Since 1930

MIDDLEVILLE, MICHIGAN

Nationally Advertised!

Powerful selling advertisements for all White WATER-HOTTERS appear regularly in such leading publications as Saturday Evening Post, Good Housekeeping, Better Homes & Gardens and Country Gentleman —to win your prospects, help you close sales FAST.

Patented. Copyright 1951 White Products Corporation

WHITE PRODUCTS CORPORATION
MIDDLEVILLE, MICHIGAN

Please send me the White "Water-Hotter" story. My business letterhead is attached.

My Name.....

Address.....

City..... Zone.....

County..... State.....

make PAINE your first choice

Expansion Screw Anchors

For more than forty years Paine Fastening and Hanging Devices have been the first choice of the best craftsmen. They have found, through use, that Paine's high quality material and production assures ease and speed of installation. Today and tomorrow make Paine devices *your* first choice.

Paine Expansion Screw Anchors will HOLD in any solid material. Anchors are stamped with size and thread of bolt or screw required, and have a directional arrow indicating which end goes in the hole. Setting tool furnished with each box of anchors.

For the holes use a Paine "Sudden Depth" Drill.

THE PAINE COMPANY
2953 Carroll Ave., Chicago 12, Ill.

the best craftsmen always take PAINE'S

Spring Wing Toggle Bolts	Conduit Clamps	Star Drills
Expansion Anchors	Pipe Hooks and Straps	Malleable Shields
"Sudden Depth" Drills	Hanger Iron, perforated	Special Hanging and
Wood Screw Anchors	Expansion Shells	Fastening Devices

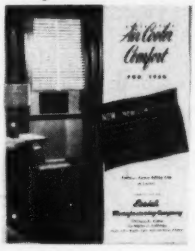
Sales Aids...

Attractive Dealer Display

As part of an expanded advertising and merchandising program, this manufacturer is furnishing dealers with this attractive, eye - catching easel display. The life-size display is shown with either a gas or oil automatic heating unit, and is intended as a stopper for the transient shopper who may be considering converting to oil or gas heating.

Manufacturer: Toridheet Division, Cleveland Steel Products Corp., Cleveland.

Evaporative Cooler Folder



Information on a line of evaporative air coolers, in one-room and larger sizes, is presented in a recent six-page folder. Representative models of the 18-unit line are shown. Line includes window mounting, fan and blower types and larger coolers suitable for commercial, industrial and larger home installations. Folder describes the "pour-in" drawer and recirculating pump features which make certain units self-contained.

Issued by: Essick Manufacturing Company, 1950 Santa Fe Ave., Los Angeles 21.

Pipe Nipple Folder

Available now to dealers is a four-page folder describing the standard lengths and diameter of pipe nipples supplied in standard and assorted packages which comply with U. S. Dept. of Commerce, Bureau of Standards specifications. The folder can be supplied in quantity, with individual company imprints for distribution to customers.

Issued by: Chicago Nipple Manufacturing Company, 1616 S. Laramie Ave., Cicero, Ill.

General Fan Catalog

Recently made available is a new catalog describing in detail a complete line of fans for 1951. Produced in color, this 32-page publication gives design and construction specifications with complete performance data on the various types of desk and stand fans, air circulators, ceiling fans, kitchen ventilators, and exhaust, attic and window fans. Also included is detailed dimensional information for the four last-named units.

Issued by: The Emerson Electric Manufacturing Company, St. Louis 21.

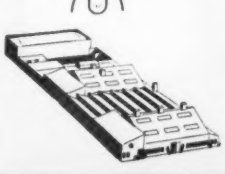
A FINE NAME IN WATER HEATER *Thermostats*

Utility

1. *Long Trouble-Free Service Life*
2. *Thermostat and Valve Available Separately*
3. *Ruggedly Built*
4. *Few Parts and Easily Accessible*
5. *Built to Last*
6. *Tube Lengths 4⅞, 6½ and 8½ in.*

In over twenty years of building gas controls we have never offered a product which so rapidly gained national acceptance. For Water Heater Thermostats on which you can DEPEND, specify UTILITY.

Certified by AGA



THE UTILITY CONTROL COMPANY FACTORY

Utility CONTROL COMPANY

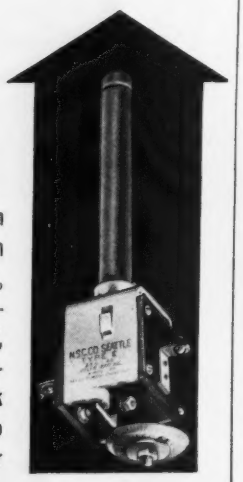
832 EAST 108th STREET • LOS ANGELES 59, CALIFORNIA

NATIONAL

WATER HEATERS

with a top selling double feature in

ELECTRIC...



1. Patented Snap Action Thermostats, submerged in the water for accurate, positive temperature control. They SNAP on and off, and they're a SNAP to service or remove... **the tank stays full**... no strain, "no drain" with National's copper wells.

2. Exclusive 100% efficient Immersion-Type Heating Elements rapidly transfer all the heat generated directly into the water, and they're easily removable... **the tank stays full** while you slip them out of National's "no drain" copper wells.

National Electric Water Heaters are made in round and table-top models. There is a size, type and price range for every need. All models are fitted with National's double features that guarantee customer satisfaction. Sold through leading plumbing wholesalers.

Write for illustrated catalog

DOUBLEX ELECTRIC

NATIONAL STEEL CONSTRUCTION CO.
500 MYRTLE STREET, SEATTLE 8, WASHINGTON
301 WATER STREET, LOGANSPORT, INDIANA

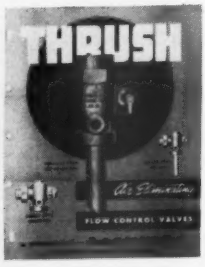
CONTINENTAL WATER HEATER CO.
1801 PASADENA AVE., LOS ANGELES 31, CALIF.
ALSO MANUFACTURERS OF OIL FIRED WATER HEATERS • RANGE BOILERS
HYDRO PNEUMATIC TANKS • WATER STORAGE TANKS

Gas Floor Furnace Sales Aid

Here's a color film produced to introduce a new line of gas floor furnaces to distributor and dealer sales organizations. The 16 mm sound-on-color film shows construction features, actual operation and service and installation short cuts of the new models. Other promotion pieces announced for this product include a six piece, full color point-of-sale display and a chrome furnace demonstration rack.

Issued by: Duo-Therm Division, Motor Wheel Corporation, Lansing, Mich.

Flow Control Valve Folder



Recently released is a four-page folder containing illustrations and information on this company's flow control valves. Featured are the vertical and the angle flow control valves. Roughing-in dimensions and sizes and capacities of the two types, both with and without tubes, are given in tables. Typical installations of the valve with air vent tube are shown on the back page.

Issued by: H. A. Thrush & Company, Peru, Ind.

Tables: Fuel Cost

To facilitate quick, accurate cost comparisons between oil, coal and gas as heating fuels, here is a new, self-explanatory, durable cost table. From years of experience, some dealers have become familiar with various rule-of-thumb methods for comparing the costs for various types of fuels. These tables will help make the switch from approximations to exact estimates. Two things required to be known about each fuel for use of the tables are its unit cost and its unit heating value. The table tells you how to complete this data, and from then on it's a one-two-three operation.

Issued by: Oil-Heat Institute of America, 6 E. 39th St., New York City 16.

Heat Loss Guide

A pocket-sized guide, in slide-rule style, has been designed for figuring heat loss in apartments, hotels and office buildings, thus saving time in figuring.

It points out, for example, how wind effect may double the building's heat loss. It also illustrates the proper length of burner operation in proportion to outside temperature. Purpose of the guide is to demonstrate how the manufacturer's outdoor control system automatically reduces needless waste of heat and fuel through maintenance of correct inside temperature in proportion to the effect of wind on the building.

Issued by: Minneapolis-Honeywell Regulator Co., Merchandising Div., Minneapolis.

The On Swing

- Valve body top set fl
- Spade sha through s bronze me of the ren
- Bronze sw wardly wit balanced, standard i to body tight conn
- 2" clearan prevents f ing with s
- Adjustable Boosey No meet all s

More and are specifying because of th design featur plete from ro you.

NOR
Div
420 NO

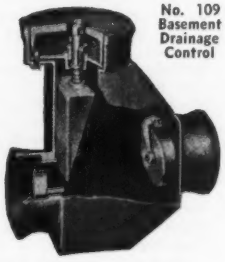
Boosey BASEMENT FLOOD CONTROL

BOOSEY No. 109

The Only Backwater Valve with Automatic Swing Check Valve and Manually Operated Gate Combined in One Unit

- Valve body is cast iron with removable top set flush with floor.
- Spade shaped gate valve will easily cut through sewage. It is operated by a bronze metal non-rising stem by means of the removable wheel handle.
- Bronze swing check valve operates inwardly with the flow and is a perfectly balanced, rotating disc type valve with standard iron pipe threaded connection to body assuring a dependable water tight connection.
- 2" clearance below the check valve prevents foreign material from interfering with seating of valve.
- Adjustable extension models of the Boosey No. 109 Series are available to meet all sewer depth requirements.

More and more architects and engineers are specifying Boosey drainage equipment because of their dependability and practical design features. The Boosey line is complete from roof to basement. Let us help you.



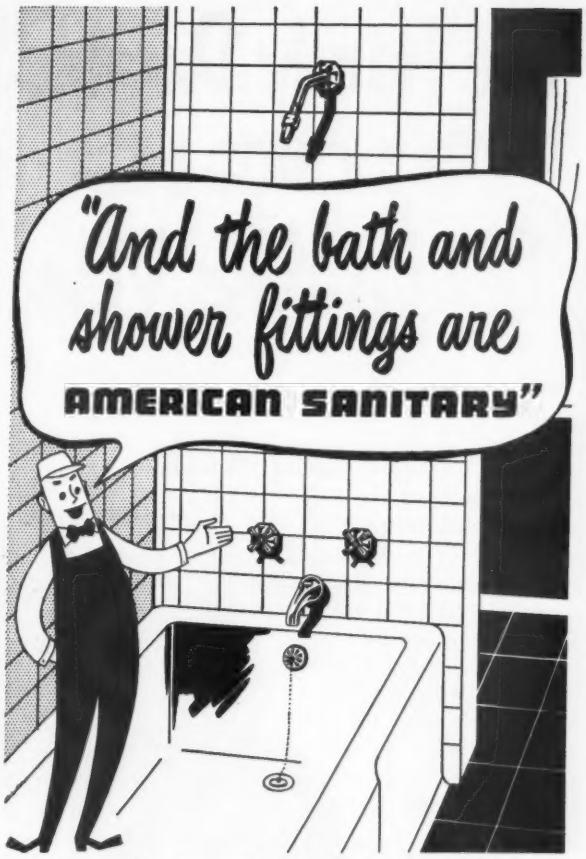
No. 109 Basement Drainage Control

Boosey Drainage Control Prevents Flooding From:

- Gorged Drainage Systems
- Discharge from Fixtures Above Basement Level
- Storm Water from Roof Areas
- Sub Soil Drainage

Write for Special Literature on Basement Flood Control

NORMAN BOOSEY MFG. CO.
Division American Skein & Foundry Company
420 NORTH LA SALLE ST. CHICAGO 10, ILLINOIS

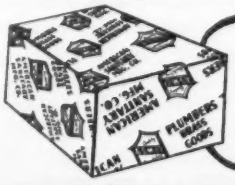


A plumber can point out American Sanitary fittings with pride. And even if customers aren't "brand conscious" enough to recognize the name, they will still appreciate the quality.

No. 2140

No. 467

Ideal for government and other "DO" orders, the American Sanitary No. 2140 bath and shower fittings, with No. 467 "Rapidrain" waste and overflow, combine high quality with moderate price. Diverter spout is cast brass. Valves, with ½" brass ground joint unions, are on 8" centers. All exposed parts are chrome plated. The No. 467 "Rapidrain" waste and overflow completes a superior but economical installation.



"THIS BOX MEANS BUSINESS!"

We Distribute Through Wholesalers Only

AMERICAN SANITARY
MFG. CO. ABINGDON, ILLINOIS

Over Forty Years' Leadership in the Plumbing Industry

The Handy Durable RIDGID Bench Yoke Vise

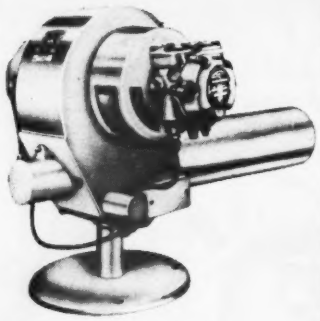
It's got what you need for easy work

● You save time and effort with this more-for-your-money RIDGID Bench Vise. Right where you need 'em are its integral pipe rest and benders that won't flatten pipe—and heat-treated tool-steel LonGrip jaws mean you don't have to be so fussy with polished pipe. Special malleable frame, extra durable. 8 sizes to 6" pipe, bench, post, stand and Tristand models, yoke and chain. Order from your Supply House.

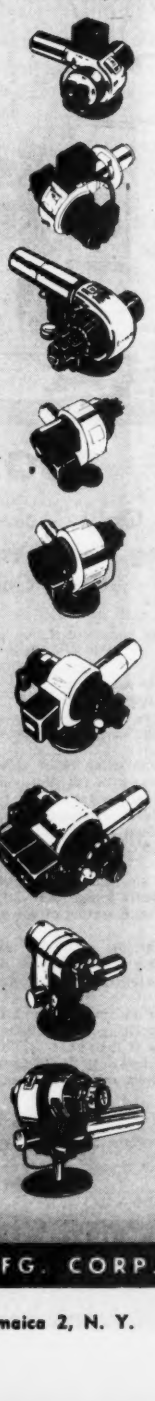
RIDGID

★ Work-Saver Pipe Tools ★

They're Way Ahead in Design · Performance and Sales



Models from 0.7 to 25 g.p.h.



It pays to sell the Sun-Ray because it's a quality line, built by one of the leading and oldest burner manufacturers. Sun-Ray burners are endorsed and specified by architects, engineers, builders, realty managers, federal, state and city departments everywhere. Thousands upon thousands of these burners are installed every year in homes, apartment houses, stores, factories, schools, churches, institutions, etc.

It pays to sell Sun-Ray because Sun-Ray sales literature, newspaper mats, window displays and signs make Sun-Ray known to your customers as an outstanding name for economical heating. Sun-Ray factory engineering and sales cooperation are outstanding.

For quicker service—Sun-Ray Burners are factory stocked in Buffalo, Chicago, St. Louis, Detroit and Portland, Ore. They are also warehoused by leading distributors throughout the country.

Investigate the Sun-Ray line from every angle—design, specifications, installation, service, performance, price. You'll discover—as have many others—that it pays off handsomely to enjoy a Sun-Ray sales franchise.

Inquiries invited from furnace and boiler manufacturers.

SUN-RAY FULLY AUTOMATIC OIL BURNERS

Famous the World Over for Quality and Economy

SUN-RAY BURNER MFG. CORP.

139-28 Queens Boulevard — Jamaica 2, N. Y.

Plumbing and Heating Under CMP

(Continued from bottom of page 87)

plies is harmful to the plumbing and heating industry in ways besides curtailing the flow of its fundamentally essential products. Thus, it is likely that skilled manpower would be lost because of sporadic production slowdowns.

Procedures used in estimating materials requirements of the plumbing and heating industry are of considerable significance. In Washington, the people computing materials requirements under the Controlled Materials Plan were informed that it is desirable to obtain the materials requirements by the use of a bill of materials. A bill of materials describes, for a given time, the basic materials and components which the producer of the end item must use in order to produce one or a given number of units.

The materials include any wastage on the part of the producer of the end-item products, scrap developed in processing, and rejections of material during processing. Generally, the computers of materials requirements had considerable difficulty fitting in the requirements on the Government forms, which had rather complicated breakdown classifications.

Bill of Material System Not Used

The bill of materials system, however, was not used in the case of the plumbing and heating industry. Previous experience had indicated that in many cases—such as in the plumbing and heating industry—it is neither feasible nor appropriate to develop material requirements by use of the bill of materials.

Urgency of getting materials requirements figures required taking short cuts in some cases. In some products the most reliable quick approach was found to be correlation of the use of one material with another in homogenous groups of items. In other products, the most appropriate way was to study data on requirements for related material.

In calculating materials requirements for the plumbing and heating industry, the Government programming men necessarily used lead time factors. Lead time represents the number of months from the date when materials are shipped by the supplier to date of completion of the end item in which they are incorporated. In using the lead time factor, it was assumed that materials would be shipped on schedule and no allowance was made for inventory accumulation.

Though hastily computed, the materials requirements figures for the plumbing and heating industry under the Controlled Materials Plan were put together as painstakingly as pressure permitted, and have taken into consideration all likely needs of the civilian and war economy.

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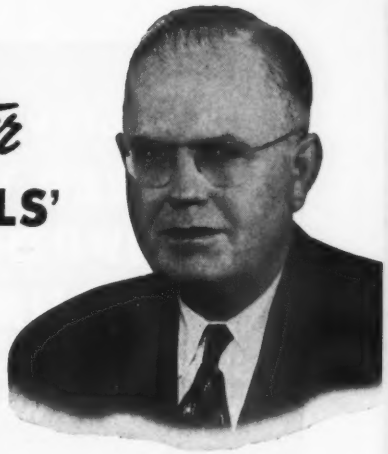

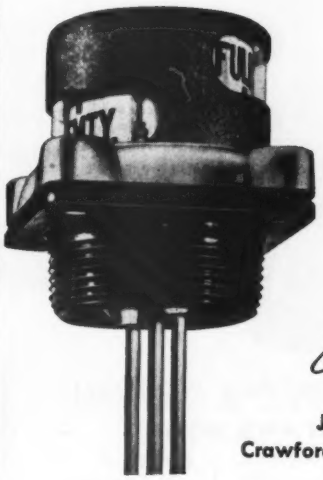

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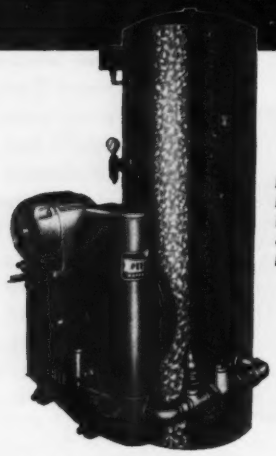

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LIFTS: 6" and 9" stroke for lifts to 1000 feet

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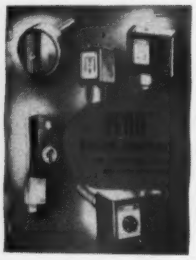
THE COMPLETE LINE

Boiler Controls Bulletin



Recently issued is a bulletin covering all of the various types of boiler controls produced by this manufacturer. Shown are units for temperature, pressure and vapor applications; also given are complete ordering specifications for all of the six basic types of boiler controls in the line. Specifications include type designations, application information, temperature element and I.P.T. connector sizes, electrical data, as well as roughing-in dimensions.

Issued by: Penn Electric Switch Co., Goshen, Ind.

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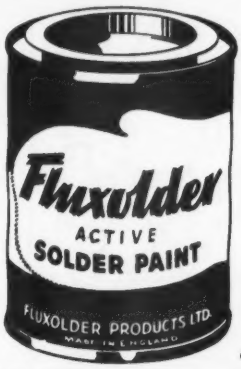

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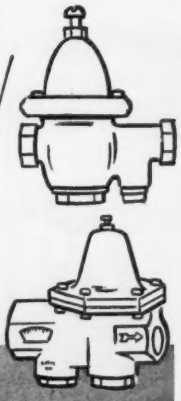

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LAST LONGER

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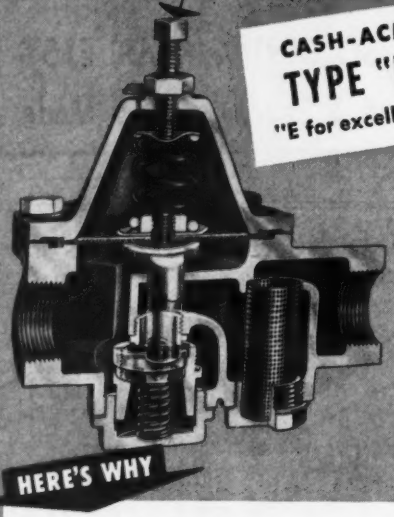

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In steam service, you can depend on Macbeth brand Gauge Glasses to stay crystal-clear permanently. They resist fogging, pitting, etching and staining . . . provide maximum visibility at all times, even at a distance.

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Water Supply Pipe Sizing

(Continued from bottom of page 103)

any given rate of flow. Experience has shown, however, that the simplest method of expressing losses in fittings and valves is to use the concept of an equivalent length of straight pipe. It has been found, for example, that a 1 inch, 90-deg elbow, introduces a loss which is equivalent to 2.2 ft of straight 1-in. pipe. Therefore, for each 1-inch, 90-degree elbow, 2.2-ft of 1 in. pipe are added to the total length of 1 in. pipe.

TABLE FOUR

ALLOWANCE IN EQUIVALENT LENGTH OF PIPE FOR FRICTION LOSS IN VALVES AND THREADED FITTINGS

	Equivalent Lenth of Pipe for Various Fittings						
			90 Deg. Coupling				
Diameter of Fitting In.	90 Deg. Standard E11 Feet	45 Deg. Standard E11 Feet	Side Tee Feet	or Straight Run of Tee Feet	Gate Valve Feet	Globe Valve Feet	Angle Valve Feet
⅜	1	0.6	1.5	0.3	0.2	8	4
½	2	1.2	3	0.6	0.4	15	8
¾	2.5	1.5	4	0.8	0.5	20	12
1	3	1.8	5	0.9	0.6	25	15
1¼	4	2.4	6	1.2	0.8	35	18
1½	5	3	7	1.5	1.0	45	22
2	7	4	10	2	1.3	55	28
2½	8	5	12	2.5	1.6	65	34
3	10	6	15	3	2	80	40
3½	12	7	18	3.6	2.4	100	50
4	14	8	21	4.0	2.7	125	55
5	17	10	25	5	3.3	140	70
6	20	12	30	6	4	165	80

To determine pressure loss through various types of special apparatus and fittings, such as vertical hot water storage tanks and water softeners, see Table No. 5, on page 196. This table gives the loss in equivalent lengths of pipe. The loss for water meters varies considerably with the design, even in meters of the same nominal size. The values given in Table No. 3 are ample for

(Please turn to top of page 196)

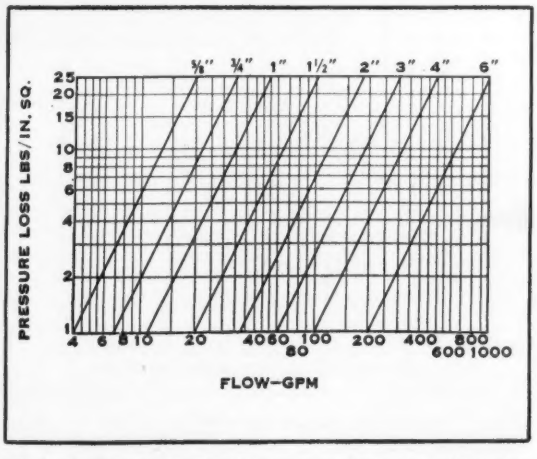
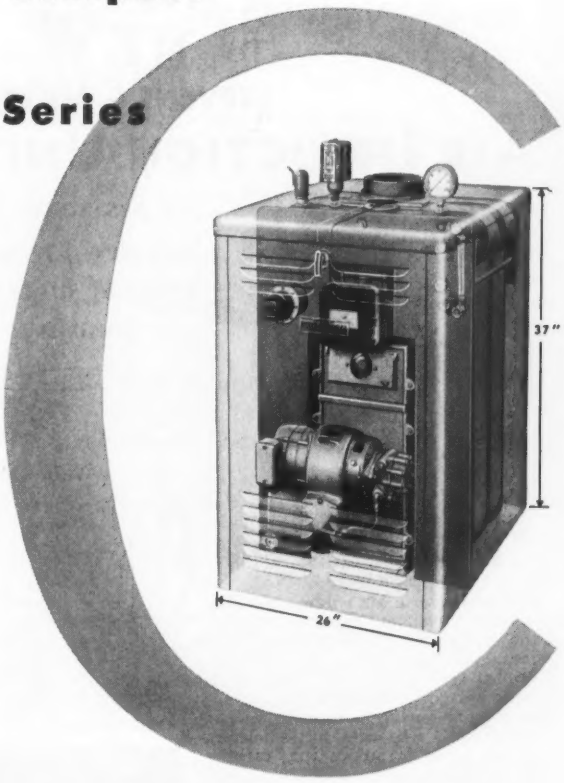


Chart 6: This chart gives the pressure losses in various sizes of water meters, in pounds per square inch. To use the chart, take as given a flow of 60 gpm. Entering at the bottom at 60, follow up until this line intersects a given 1 in. meter. Following the line of intersection to the left, we find that a 1 in. meter with a 60 gpm flow has a pressure drop of 11 psi.

The Compact Series C



OIL ECONOMY® BOILER

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From base to smoke hood, the Series C Boiler has been designed for just *one* purpose — to *burn oil economically!* Small and compact in size, yet far superior in heat output to many bigger, bulkier boilers. Pre-formed firing chamber, "wet" bottom, glass wool insulation on five sides, built-in domestic water heater, factory assembled sections, the exclusive Econoloop — these are just a few of the reasons why the Series C is tops in comfort and economy for modern home heating. Complete with burners, controls and accessories in smart enameled jacket.

Amazing ECONOLOOP®

No other boiler has it! Econoloop changes temperature of water in radiators to suit outdoor conditions—causes longer circulator operation—more uniform heating—protects domestic water supply.

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Capacity 74,000 B.T.U. to 160,000 B.T.U. Per Hour

See the "C" at your Jobber's . . . or write . . .

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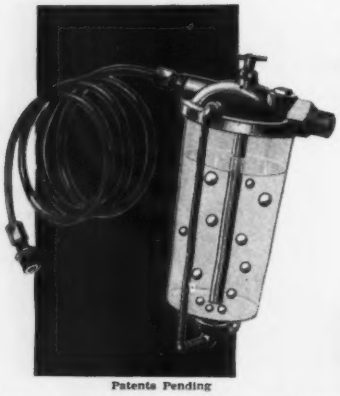

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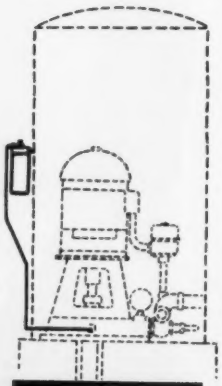

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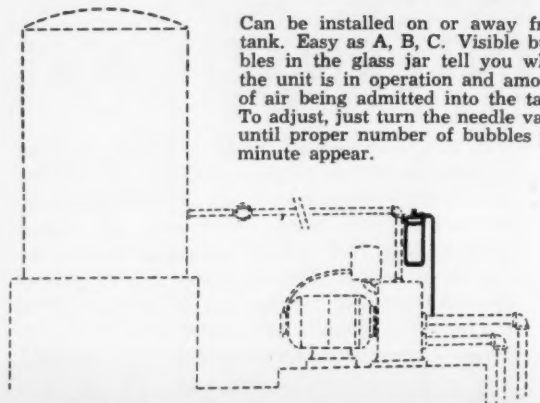
Can be installed on or away from tank. Easy as A, B, C. Visible bubbles in the glass jar tell you when the unit is in operation and amount of air being admitted into the tank. To adjust, just turn the needle valve until proper number of bubbles per minute appear.



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The STEVENS & MILLER Air Induction Unit provides a constant, uniform air cushion in the tank in the form of clean, washed air during the entire operation cycle . . . free from foreign substances.

YOUR JOBBER HAS IT OR CAN GET IT FOR YOU

STEVENS & MILLER, INC.
GENERAL OFFICES
177 E. PRAIRIE ST. DECATUR, ILL.

Suitable for any size tank, up to 220 gallons. Should have at least 5" of vacuum for unit to operate satisfactorily.

Water Supply Pipe Sizing

(Continued from bottom of page 195)

the well-known meters now on the market.

TABLE FIVE

EQUIVALENT LENGTHS OF IRON PIPE TO GIVE SAME LOSS AS SPECIAL FITTINGS OR APPARATUS

Fitting Apparatus	Nominal Diameter of Pipe-Inches			
	½-in.	¾-in.	1-in.	1¼-in.
	Feet	Feet	Feet	Feet
30-gal. Vertical hot-water tank, ¾-in. pipe	4	17	56	
30-gal. Horizontal hot-water tank, ¾-in. pipe	1.2	5	16	. . .
Water meters (No valves included)				
⅝-in. with ½-in. connections	6.7	28	90	. . .
⅝-in. with ¾-in. connections	4.8	20	64	. . .
¾-in. with ¾-in. connections	3.4	14	45	. . .
1-in. with 1-in. connections	. . .	9	30	115
1¼-in. with 1-in. connections	. . .	4.4	14	54
Water Softener	. . .	50-200	..	. . .

STEP EIGHT: Find required size of supply main. Assume a minimum street-main pressure of 55 psi; a height of topmost fixture above street main of 50 ft; a developed pipe length from water main to highest fixture of 100 ft; a total load on the system of 50 fixture units; and that the water closets are flush-valve operated.

Solution—From Chart No. 2, (pg. 89, May issue) the estimated peak demand is found to be 51 gpm. From Table 3 it is evident that several sizes of meters would adequately measure this flow. For a trial computation choose the 1½-in. meter. From Chart No. 6 the pressure drop through a 1½-in. disc-type meter for a flow of 51 gpm is 6.5 psi.

Then the pressure drop available for overcoming friction in pipes and fittings is 55 — (15 + 50 times 0.43 + 6.5) = 12 psi.

At this point it is necessary to make some esti-

(Please turn to top of page 199)

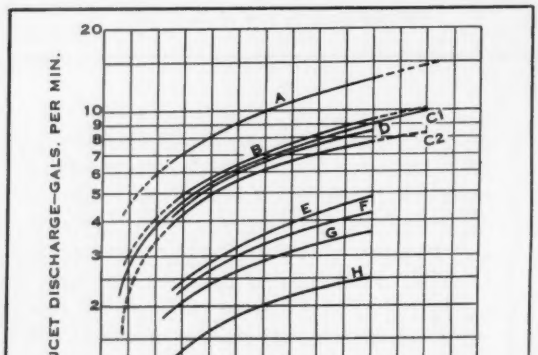

Chart 7: Variation of pressure loss with rate of flow for various faucets and cocks: "A", ½ in. laundry bibb (old style); "B", laundry compression faucet; "C-1", ½ in. compression sink faucet; "C-2", ½ in. compression sink faucet (different manufacturer); "D", combination compression bathtub faucets (both open); "E", combination compression sink faucet; "F", basin faucet; "G", spring self-closing faucet; "H", slow self-closing basin faucet. This data was obtained in laboratory testing programs.

"FLEXI-CLEANER"—SIMPLE, SAFE, POSITIVE, VERSATILE.

"FLEXI-CLEANER"

WORK-PROVEN SEWER CLEANING EQUIPMENT

POWERFUL—Plenty of power. Three speeds forward. Three in reverse. A.C. or D.C. 25-40-50 or 60 cycle. WE CAN PROVE THIS.

ECONOMICAL—"Flexi-Cleaner" is simple, fast, easy to use. A one man job, with fully portable equipment. WE CAN PROVE THIS.

SAFE—The operator is always behind the gun—never in front of it. He sees what he is doing at all times. WE CAN PROVE THIS.

POPULAR—"Flexi-Cleaner" is the machine that makes friends both among plumbers and their customers. WE CAN PROVE THIS TOO.

Make us prove these statements. Our representative in your territory will be glad to call and help you do an actual job with "Flexi-Cleaner". You be the judge and jury.

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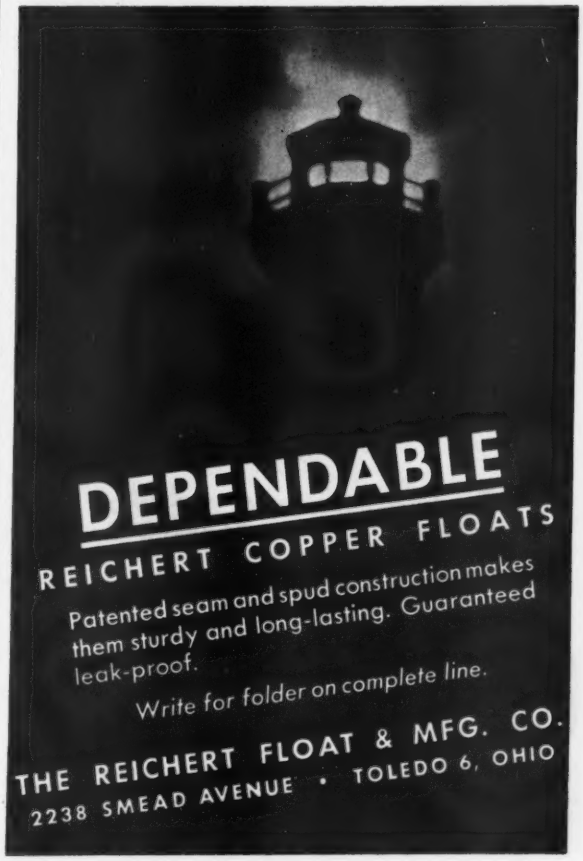

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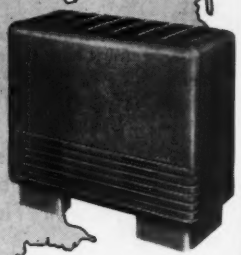

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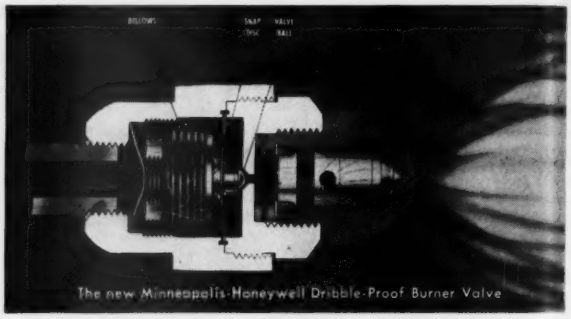

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Water Supply Pipe Sizing

(Continued from bottom of page 196)

mate of the equivalent pipe length of the fittings on the direct line from the street main to the highest fixture. The exact equivalent length of the various fittings cannot now be determined since the pipe sizes of the building main, riser, and branch leading to the highest fixture are not known as yet, but a first approximation is necessary in order to make a tentative selection of pipe sizes. If the computed pipe sizes differ from those used in determining the equivalent length of pipe fittings, a recalculation will be necessary, using the computed pipe sizes for the fittings. For the purposes of this example assume that the total equivalent length of the pipe fitting is 50 ft. Then the permissible pressure loss per 100 ft of equivalent pipe is 12 times $100 \times (100 + 50) = 8$ psi.

Assuming that the corrosive and caking properties of the water are such that Chart No. 4 on page 103 for fairly rough pipe is applicable, a 2 in. building main will be adequate.

STEP NINE: Size the branches of the building main, the risers and fixture branches. This procedure follows the principles outlined for sizing the supply main, above. For example, assume that one of the branches of the building-main carries the cold water supply for 3 water closets, 2 bathtubs, and 3 lavatories. Using the permissible pressure loss of 8 psi per 100 ft, the size of branch determined from Table 2, pg. 140, May issue and Charts 1 (page 89, May issue) and 4 is found to be 1½-in. Items entering the computation of pipe size are given in Table No. 6 below.

TABLE SIX

Figuring branch size piping, per example above

Number and kind of figures	Fixture Units (from table 2, p. 140, May issue)	Demand (from Chart 2, p. 89, May issue)	Pipe Size (from Chart No. 4)
3 flush valves	3 x 6 = 18		Inches
2 bathtubs	¾ (2 x 2) = 3		
3 lavatories	¾ (3 x 1) = 2.25		
	Total 23.25	38	1½

STEP TEN: Size the up-feed or down-feed system. The principles involved in sizing either up-feed or down-feed systems are the same. The principal difference in procedure is that in the down-feed system, the difference in elevation between the house tank and the fixtures provides the pressure required to overcome pipe friction.

Causes of Low Pressure

The water demand for hose bibbs or other large-demand fixtures taken off the building main is frequently the cause of inadequate water supply to the upper floor of a building. This condition may be prevented by sizing the distribution system so that the pressure drops from the street-

(Please turn to top of page 200)

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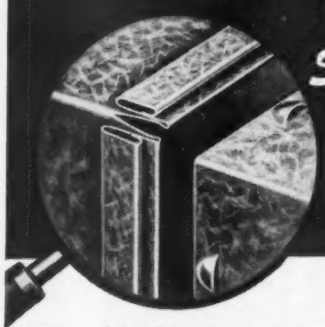

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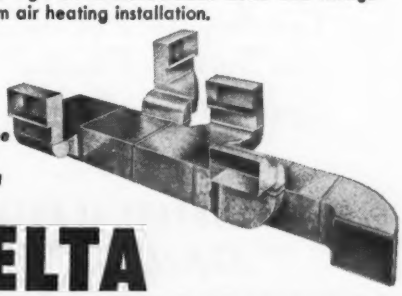

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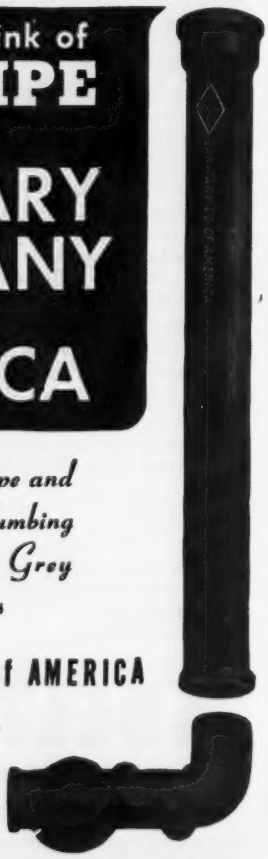

Water Supply Pipe Sizing

(Continued from bottom of page 199)

main to all fixtures are the same. It is good practice to maintain the building main at ample size (not less than 1 in. where possible) until all branches to hose bibbs have been connected. Where the street-main pressure is excessive and a pressure reducing valve is used to prevent water hammer or excessive pressure at the fixtures, it is frequently desirable to connect hose bibbs ahead of the reducing valve.

Piping System Sizing Procedure

The recommended procedure in sizing piping systems may be outlined as follows:

(1) Draw a sketch of the main lines, risers, and branches indicating the fixtures served. Indicate the rate of flow of each fixture.

(2) Using Table 2 (pg. 140, May issue), compute the demand weights of the fixtures in units.

(3) Determine the total demand in fixture units and, using Chart 1 or Chart 2 (pg. 89, May issue), find the expected demand in G.P.M.

(4) Determine the equivalent length of pipe in the main lines, risers, and branches. Since the sizes of the pipes are not known, the exact equivalent length for various fittings, etc., cannot be figured. Add up equivalent lengths starting at the street main and proceeding along the service line, main line in the building, and up the riser to the top fixture of the group served.

(5) Determine the average minimum pressure in the street main and the minimum pressure required for the operation of the topmost fixture. This latter should be 8 to 15 psi.

(6) Calculate the approximate value of the average pressure drop per 100 feet of pipe in the equivalent length determined in Item 4 above:

$$p = (P - 0.43H - 10)\,\frac{100}{L}$$

where p = average pressure loss per 100 feet of equivalent length of pipe in psi.
P = pressure in street-main in psi.
H = height of highest fixture above street main, in feet.
L = equivalent length determined in Item 4.

If the system is of the down-feed supply from a gravity tank, the height of water in the tank converted to psi. by multiplying by 0.43 replaces the street-main pressure and the term $0.43H$ in the equation in Item 6 is added instead of subtracted in calculating the term p. In this case H will be the vertical distance of the fixture below the bottom of the tank.

(7) From the expected rate of flow determined in Item 3 and the value of P calculated in Item 6, choose the sizes of pipe, from Charts 3, 4 or 5.

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Manufacturers of precision filtration equipment for more than a quarter of a century.

Peaks and Valleys

(Continued from bottom of page 100)

most of the replies to the letters are in and the call date scheduled. This backlog of 800 regular customers thus helps to fill in the inevitable gaps that occur.

When a letter is sent out to a customer this is noted on the heating unit's card in the Life History File (see last month's article for more details of this efficient office procedure). If, after a reasonable length of time, no reply comes in from a particular letter, a telephone call is made to the owner to schedule a clean-up. In this fashion a thorough and rapid coverage is effected.

Servicemen Are Assigned Territories

Each serviceman is assigned a territory in the city, and each morning he comes into the office and picks up the addresses for the day's clean-up calls. Each man does four a day, as a rule, and an attempt is made to carefully select the units so that they are all in the same neighborhood, thus saving the time driving between calls.

Telephone operators at the office get in touch with the customers whose units are scheduled for servicing during the day, making certain that someone will be home to let the serviceman in when he calls.

On the job, the neatly uniformed serviceman first tells the customer what he is going to do, referring to the letter which the customer has received listing the operations of the service. Then he is careful to place newspapers on the floor of the basement near the burner so that the job of final clean-up will be easier and the customer will not become alarmed by the accumulation of dirt.

Basement Area Is Cleaned

After the clean-up is finished, the controls checked, and the unit found to be in perfect working order (see page 101 for details), the serviceman then carefully cleans the area near the burner, making certain that he has left no trace of dirt to annoy the customer.

"From a customer relations point of view," says Mr. Davidson, "this is probably the most important operation of the service call. Nothing makes a better impression on the customer than to find the area around the heating unit neat as a pin. Most of the time, the basement is left in a better condition than the serviceman found it."

Not only does the summer servicing program help Automatic Oil Heating to level out the peaks and valleys of its business volume, but it also serves to create good will for the firm. Pleased by a job well done, the customer is further impressed by the Company's concern for his comfort as revealed by the perennial friendly reminder of the proper time for summer servicing.

Why This Trap Provides Long Life Under the Severest Conditions

Barnes & Jones Float and Thermostatic Traps are designed and built to handle sudden and large condensate loads efficiently . . . *and dependably.* Trap responds instantly to change in condensate load, requires no change in temperature. Working parts are all easily accessible — and you need no special tools. B&J Float and Thermostatic Traps are made in five sizes and are built to handle loads all the way up to 5750 lbs. of water per hour.

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"Here's the joint that keeps roots out!"
CENTER RING IMBEDDED IN TRANSITE SLEEVE
SEALING RINGS
TRANSITE SLEEVE (cut away to show rings)
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Take a good look at the picture above. It's the "inside story" of the Ring-Tite Coupling—the joint that gets right at the heart of root trouble in house sewer lines. Here is a joint that's engineered to keep roots out!

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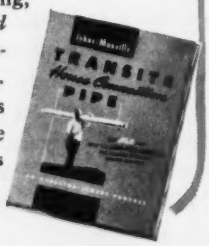
And only Transite, the white pipe, offers these other advantages that make house sewer line jobs more profitable to you today than ever before: *long 10-foot lengths* that simplify installation; *high flow capacity* that provides the quick flushing action needed to keep sewer lines free-flowing; plus the *strength, durability and corrosion-resistance* that mean a dependable, trouble-free installation.



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TRANSITE
The White
HOUSE CONNECTION PIPE
Made by Johns-Manville

According to Law

(Continued from bottom of page 123)

under this classification, according to a recent court decision.

A store owner employed a contractor to repair a fixture in his store and directed that it be done during the business day. An injury to a customer resulted when an accident occurred while the installation was in progress and he sued the store owner.

The court held that both the contractor and the proprietor were jointly liable in awarding the injured party damages of $15,000.

Citation: Frost v. Andes, Inc., 69 H.E. (2d) 732.

Contractor Is Entitled to Interest

A PROPERTY OWNER refused to pay a plumbing contractor the full amount due on completion of a job. The contractor filed suit against the property owner for the amount of $675.00 with 5% per annum interest from June 5, the date the company received a certificate of completion from the city plumbing inspector.

The higher court ordered the property owner to pay this amount to the contractor, and said that interest on the amount due the company for plumbing work completed in accordance with a contract would commence to run from time work was satisfactorily completed.

Citation: Schroeter v. Newson, 41 SO (2d) 697.

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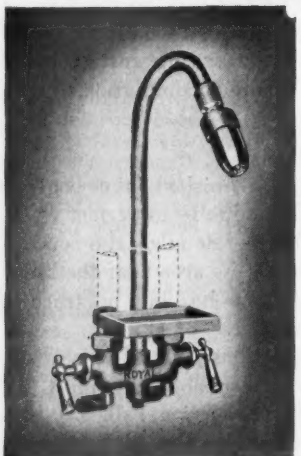

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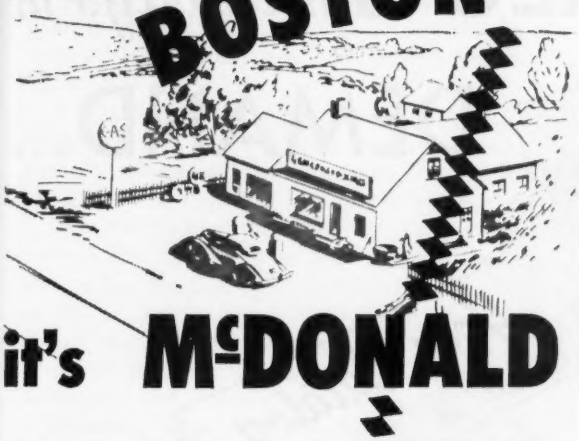

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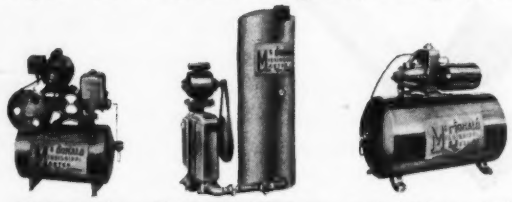

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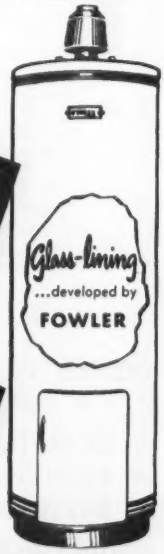

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Pipe and Boiler Insulation

(Continued from bottom of page 159)

1-in. galvanized wire mesh; I,12-in.-wide strip of 1-in. galvanized hardware cloth; J,asphalt mastic; K,line of cleavage.

A single ingenious application of mineral wool insulation at a chemical plant is serving to guard against freezing and prevent overheating in process lines, and to control heat loss in a steam line.

Generally when the contents of an outdoor process line must be kept from freezing, a steam line is run parallel to it, and the two lines are insulated within one insulation covering. The steam line heats the process line, the insulation provides protection from extreme temperature variations, and freezing is eliminated.

However, when the Stauffer Chemical Co., Niagara Falls, N. Y., planned to apply this technique and make use of a 340 deg steam line carrying steam to inter-plant processes, it was found that the steam line would overheat the process lines. (In this case there were two process lines—caustic soda and compressed air lines.)

Insulation Provides Solution

The common-sense solution was to insulate the steam line to a thickness which would permit escape of only enough heat to prevent freezing of the caustic soda and the moisture in the compressed air. This was done, with the result that, when the pipe-trio was encased in an overall covering of mineral wool, the process lines were prevented both from freezing and overheating. Further, the steam line was sufficiently insulated by the double layer to prevent heat from wasting to the atmosphere. Overheating of the process lines during the summer was also prevented by this insulation-within-insulation technique.

The insulation technique used in this type of application is indicated in the cross-sectional drawing, Fig. 6 on page 149. First, after removing extraneous material such as grease and dust from the 300 ft. pipes, one-inch molded sectional pipe insulation is applied over the entire surface of the two-inch steam pipe with the sections tightly butted together and securely held in place by metal bands.

Second, mineral wool blankets, sandwiched between facings of wire mesh, are cut and shaped around the three pipe lines. The blankets are then wired in place with 16-gauge galvanized wire. Abutting ends and edges of the blankets are tightly laced together with 16-gauge galvanized wire woven into the mesh coverings. To complete the outdoor installation, asphaltic roofing-felt is wrapped around the entire surface, lapped three inches against the weather and bound on approximately 6-inch centers by galvanized wires wrapped around the felt and tightly secured.

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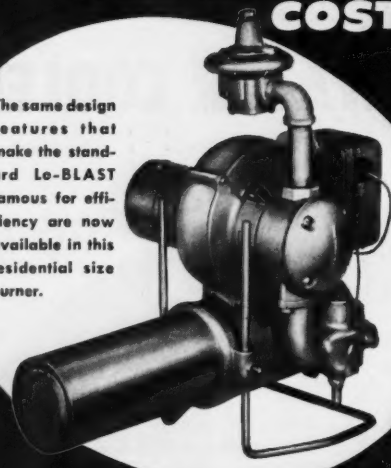

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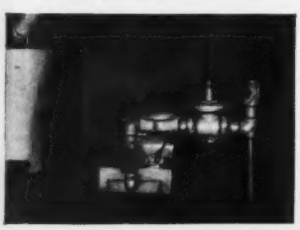
THE "MIGHTY MITE"

OF CONVERSION GAS BURNERS

Nothing like it on the market! Here, indeed, is an *utterly different and better* gas burner. Consider these features: Power burner design assures perfect combustion, regardless of natural draft conditions—a proved fuel saver—safe and efficient for down-draft heating plants. The Economite burns so smoothly you can't tell when it's running—no "pop" when the burner goes on and off.

Every Economite is factory-tested on gas and shipped assembled—fully equipped with fool-proof safetys. Simplicity of design and durable construction reduce service to a minimum. Capacities of 70,000 to 300,000 BTU give thorough coverage of the residential field.

DEALERS! You can make real money on the exclusive sales features of the Lo-BLAST Power Gas Conversion Burner. Get the facts—write today.



The Standard Lo-BLAST for larger installations. Capacities up to 20,000,000 BTU input.

MID-CONTINENT METAL PRODUCTS CO.
1960 N. Clybourn Ave., Chicago 14, Ill.

Circulating Pump Sizing

(Continued from bottom of page 144)

I like a seven so well that I buy an eight." You have probably heard a variation of this story in the sizing of circulating pumps for heating systems.

Figure 2 represents a family of curves showing the performance of a certain manufacturer's line of circulating pumps. For purposes of illustration, let us assume that a 1-½ in. pump was specified to deliver 25 gpm at a 6 ft head. Now let us further assume that the man who gets the job is the conservative type and decides to put in a 2 in. pump. If we refer to the curve for the 2 in. pump we find that this pump is capable of pumping more water at higher head pressures. Let us assume that the original designer of this job who specified the 1-½ in. circulating pump was within the limits of the 4 ft per second allowable velocity. The larger pump, however, pumping more water, is quite likely to upset this condition, increasing the velocity so it may go far above the 4 ft per second allowance, causing noise and other troubles. This condition may occur, therefore, when a pump is oversized, and before a pump is selected over someone else's design or specifications, all pertinent facts should be carefully investigated.

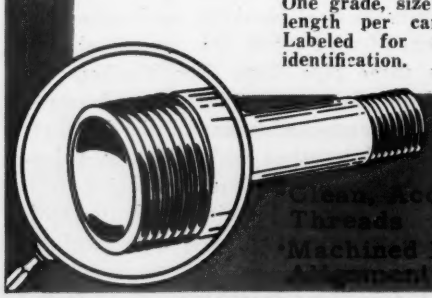
With the facts set forth in this article the contractor can be sure that the correct pump will be installed to do a top-notch job.

Challenge Steel Nipples

Top Quality as Sold by Your Challenge Jobber

It pays to buy top quality merchandise . . . no less CHALLENGE Steel Nipples. Complete range of sizes: ⅛" to 12" dia., and in lengths from close to 6" inclusive. Standard, Extra Heavy and Double Extra Heavy Weights. Carton quantities as approved by U. S. Dept. of Commerce. National Bureau of Standards, addenda to Commercial Standards CS 5-46 dated March 22, 1950.

One grade, size and length per carton. Labeled for easy identification.



Clean, Accurate Threads Machined For True Alignment

FRICK & LINDSAY CO. 117 Sandusky St. Pittsburgh 12, Pa.

OVER 50,000,000 ft IN SERVICE!

For more than 20 years, Johns-Manville Transite* Flue Pipe has proved its dependability and economy in thousands of installations throughout the country. To date, there have been more than 50,000,000 feet of this asbestos-cement pipe used for flue pipe installations!

For complete details, write for Folder TR-84A. Address Johns-Manville, Box 290, New York 16, N. Y.

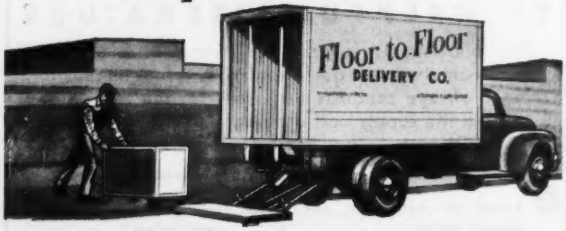
*Reg. U. S. Pat. Off.

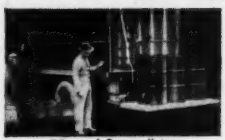
JM PRODUCTS

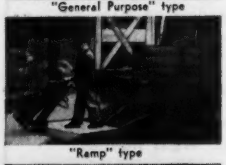
Johns-Manville TRANSITE FLUE PIPE

FOR VENTING DOMESTIC GAS-BURNING APPLIANCES

Double the earnings of your trucks!




"General Purpose" type


"Ramp" type

"Pick-Up" type

ANTHONY "LIFT GATES" CUT LOADING and UNLOADING TIME IN HALF!

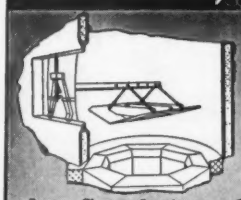
More trips per day...

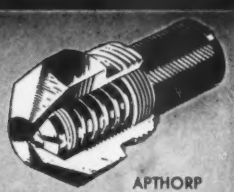
Anthony Lift Gates have proved to the shrewdest truck operators in over 58 totally different industries, from Pie Bakeries to Steel Mills handling everything from diapers to dynamite, that they drastically cut operating costs . . . slashing them as much as 50%. Loading and unloading time is reduced to a fraction of the usual time. Practically doubles the number of daily deliveries. Greatest efficiency and savings are secured only by using the *"type"* of gate most practical for your specific loading and handling requirements. *Anthony Lift Gates* are available in all 3 types to fit the many specialized needs—and you have a choice of "Hydro Power" Closing or "Spring Powered" Closing.

Write for "The Facts About Lift Gates" which explains the advantages of each type—there is no obligation. Dept. 302

ANTHONY CO. Streator, Illinois

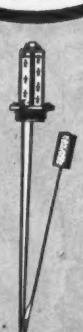
FOR Quality INSTALLATIONS


Boston Chrome Steel "HANG-DOWN" BAFFLE

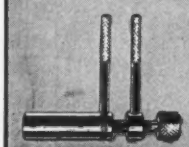

APTHORP True Alignment OIL BURNER NOZZLE

BOSMACO

Instant-Glo COMBUSTION CHAMBER


Clearview OIL TANK GAUGE

The Boston Standard DRAFT CONTROL


Ideal NOZZLE EXTRACTOR

BOSMACO Apthorp NOZZLE KIT

WRITE FOR COMPLETE INFORMATION

BOSTON MACHINE WORKS COMPANY

Oil Heating Supplies Division Manufacturers, Lynn, Mass.

Never before has QUALITY been so important as today. In their modernization programs, hospitals, schools, institutions and industrial plants specify JUST LINE Stainless Steel equipment. They know that it not only assures them the utmost in sanitation, but gives a lifetime of service at lowest maintenance cost.

PLUMBERS: Regardless of what your modernization contracts may call for, send us your specifications. We'll cooperate with you in developing plans and furnishing estimates.

Just Manufacturing Co.
4610-20 W. 21st Street, Chicago 50, Illinois

MIKE ROMET pipes up . . .

To lick red water . . . scale . . . corrosion . . . Brother, here's a gilt-edged bet! Solve all three—and at a profit—

JUST RELY ON MICROMET®!

Write for literature.

CALGON, INC.,
HAGAN BLDG., PITTSBURGH 30, PA.

INDEX
TO HELPFUL LITERATURE

The following list is published as a help to readers who want the latest authoritative literature on plumbing drainage products necessary for the protection of both the supply and drainage lines. Simply check "Items Wanted", and mail as indicated below.

1. Folder on roof, floor, and shower drains
2. Folder on LEVELEZE adjustable top floor drains
3. Manual RA—specifications and roughing dimensions on all drainage products
4. Manual A—the complete treatise on grease interception
5. Folder on backwater and sewer valves
6. Folder on Moderator Shower Mixing Valves
7. Manual SP-3—a 32-page book on Swimming Pool Construction
8. Folder on Shock Absorbers for Water Hammer

✓ CHECK "ITEMS WANTED"

[1] [2] [3] [4] [5] [6] [7] [8]

AND MAIL TO
JOSAM MANUFACTURING COMPANY
304 JOSAM BUILDING • CLEVELAND 13, OHIO

Displays That Sell

(Continued from bottom of page 97)

Lake City. In front of one of their showroom window displays, they rigged up a curtain that opened and closed automatically. Customers stopped in front of the window just to find out what the curtain would reveal. A gimmick? Yes, but it *emphasized* the units that were being sold.

But, it is easy to ask, what of displays where special lighting or motion are not feasible? The logical answer, of course, is in arrangement.

The simplest type of arrangement for emphasis is to have one item stand in front, or above, the rest. A common form of this arrangement is the triangle. However, sometimes dealers are willing to go to what might be called "extremes" in setting up the background of the display to adequately gain emphasis.

Displays Chrome On Black Velvet

The Springfield Plumbing and Heating Company, of Springfield, Mo., uses black velvet to emphasis chrome fittings and small parts. There is a definite, highly dramatic effect in the arrangement of polished chrome items on a jet black background. In this case, the emphasis alone was enough to increase the sale of these items.

Another contractor-dealer, A. J. Cummings of Clinton, Ia., uses a type of "reverse" emphasis to perk up specific display items. One display that was very effective included a model bathroom and a mannikin. The fact that a mannikin is a rare object in a contractor-dealer's window is what created the primary interest—interest that carried over and placed emphasis on the bathroom display.

Returning to the single display, which is most common in the showroom, it is necessary to have either careful arrangement or a unique setting to create emphasis which in turn will create eye-appeal for the prospective customer.

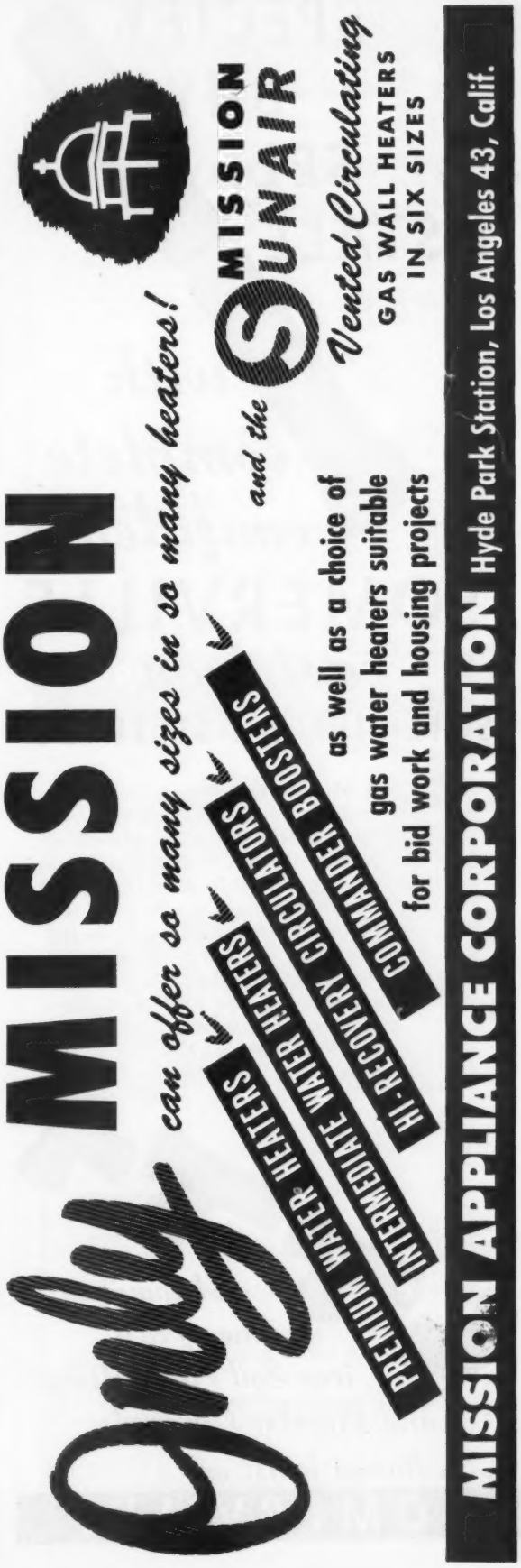
Emphasis Is Gained From Arrangement

Emphasis was gained for the water closet display of A. R. Thompson, of Norfolk, Va., by placing three different types of units in a triangle on a pedestal. The top of the inside area that was formed was ideal for a display of closet seats.

And, speaking of closet seats, E. Sugarman, Inc., of San Francisco, created a display that aroused a great deal of interest by utilizing the shape of a painter's pallette. Instead of swatches of color, Mr. Sugarman used closet seats, in various colors, and two mops become the paint brushes. In both of these last two cases, tremendous emphasis was placed on a single type of item for a more effective display.

Example after example could be cited to show how domestic engineering dealers change fair

(Please turn to top of page 217)


Only MISSION can offer so many sizes in so many heaters!
and the SUNAIR
Vented Circulating
GAS WALL HEATERS
IN SIX SIZES
PREMIUM WATER HEATERS
INTERMEDIATE WATER CIRCULATORS
HI-RECOVERY BOOSTERS
COMMANDER
as well as a choice of
gas water heaters suitable
for bid work and housing projects
MISSION APPLIANCE CORPORATION Hyde Park Station, Los Angeles 43, Calif.

SPECIFY
BUY
SELL
INSTALL

with complete confidence

SOMERVILLE
cast iron
SOIL PIPE *and* FITTINGS

● Modern equipment, up-to-date methods, skilled workmen, top quality materials are all combined at Somerville to give you the finest product possible. Whether you specify as an architect, buy and sell as a jobber or install as a plumbing contractor you can place complete confidence in meeting every plumbing and sanitary code when it's Somerville Iron. Somerville Iron Works, 600 South Mill St., New Castle, Pa.

A complete line of cast iron Soil Pipe, Fittings and Plumber's Specials

Always insist on
SOMERVILLE

New Products at the OHI Show

(Continued from bottom of page 156)

ORU boiler-burner unit to show visitors.

Corrosion resistant steel ¼ in. thick is used in the construction of the boiler drum and the combustion chamber which is completely water backed to insure maximum heat transfer. This construction is augmented by an extra large secondary heating surface suplied by four vertical flues, and results in a total heating surface substantially greater than is usually found in a compact unit of comparable size, Mr. Lucas reported.

The flame is in direct contact with the water-backed wall of the combustion chamber. This, plus the secondary flues, assure of the ultimate in heat absorption efficiency and minimum operating costs.

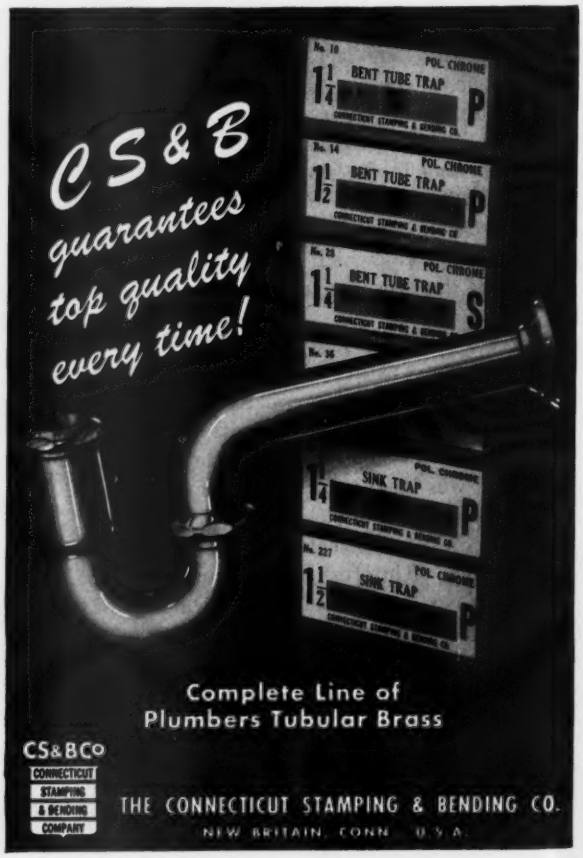
A rotary wall flame burner heats the boiler.

Item 14—Steel Boilers

Fitzgibbons Boiler Company, Inc. of New York was on hand with an exhibit featuring its "400" series of steel boilers.

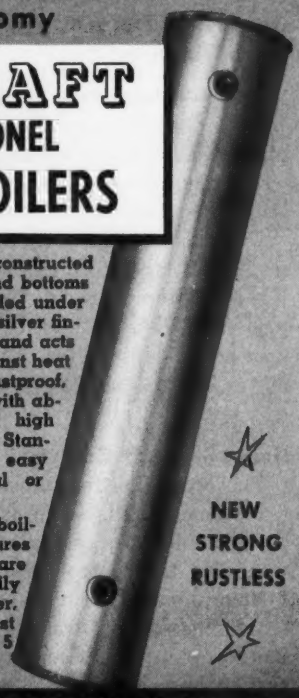
The units operate economically with oil burner, gas burner or stoker. A large combustion area permits proper burning of the fuel; powerful internal boiler water circulation gives rapid pick-up of the heating load. Easy access to the boiler heating surfaces for cleaning permits easy main-

(Please turn to top of page 214)



an outstanding development for clean hot water with top economy

ALLCRAFT
SOLID MONEL
RANGE BOILERS



Allcraft Range Boilers are constructed of solid Monel, with tops and bottoms heavily reinforced and welded under 1500 pounds pressure. The silver finish is simple to keep clean and acts as a natural insulation against heat loss. Monel is tough, rustproof, won't flake, chip or crack, with absolutely no possibility of high temperature disintegration. Standardized Uni-tap means easy installation, either vertical or horizontal.

Allcraft, solid Monel range boilers have outstanding features that help you sell — are strong, rustproof, safe, easily installed, give pure water, hotter water at lower cost and are guaranteed for 5 years.

NEW STRONG RUSTLESS

Allcraft MANUFACTURING COMPANY, INC.
27 Hayward St., Cambridge, Mass.

NOW-ASSURE YOUR CUSTOMERS YEAR-'ROUND OUTSIDE WATER

INSTALL . . .

WOODFORD FREEZELESS WALL HYDRANTS

Outside handle turns valve inside building; wall pipe drains instantly. No more going to the basement to turn water on and off in cold weather . . .

STYLE 10

SAVES time, trouble, costly repairs.

STYLE 9

STYLE 8

PROTECTS against fire hazards, especially farm and suburban.

STYLE 7

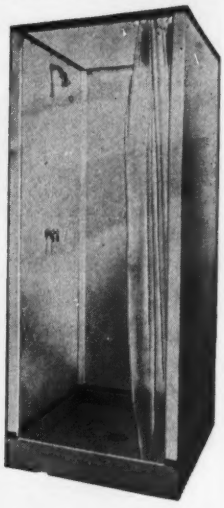
BUILT to last longer, yet it costs little if any more than old-style outlets. Brass castings. Key or wheel handle. 6" to 24" lengths.

Contact your wholesaler—or write . . .

WOODFORD HYDRANT CO.
DES MOINES 17, IOWA
Manufacturers of the Iowa Freezeless Ground Hydrant

NEPTUNE Shower Cabinets
FOR ALL YEAR 'ROUND BATHING PLEASURE!

CONVENIENT
...to Display
...to Install
...to Use!



The NEPTUNE Unit takes little space on a display floor. It lends good contrast to your other merchandise. It is quality . . . suggesting the best, most refreshing method of bathing. Invariably it sells itself as more and more people are showing greater interest in showers for they are easier to use. Light weight aluminum panels . . . sanitary, baked-on-white enamel . . . easy to clean. Shower head and arm, (plus all other brass fixtures) chrome plated. Black enamel sill and crown. Non-skid DEXITE receptor. Beautiful plastic shower curtain. Easy to install. Only 5 pieces to assemble. Two compact sizes 30x30x77 and 32x32x77 inches. Shipping wt. 200 lbs.

WRITE FOR FURTHER DETAILS TODAY.

Sell Building Contractors on Specifying NEPTUNE SHOWER CABINETS.

THE DEXTONE COMPANY
NEW HAVEN 3, (PLUMBING DIVISION) CONN.

"Pump Profits" with DURO DEEP WELL VERTICAL JET SYSTEM

A big seller . . . it's popular! Customers like the compactness of the Duro Vertical Jet System, and they like its rugged, dependable, smooth running performance. They like the Duro Vertical Jet System, and they buy it!

Display the Vertical Jet Water System, and take advantage of an excellent opportunity to "Pump up your profits!"

Duro builds a complete line of water softeners and water systems.

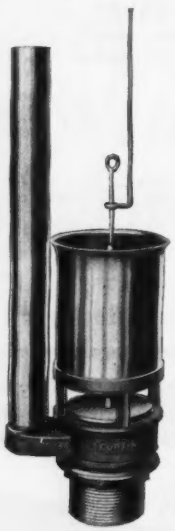
FOR MORE INFORMATION ON DURO PROFIT MAKERS, SEND TODAY FOR THE NEW DURO CATALOG!

THE DURO CO.
DAYTON 1, OHIO

YOU
can always be
assured of
CURTIN QUALITY!

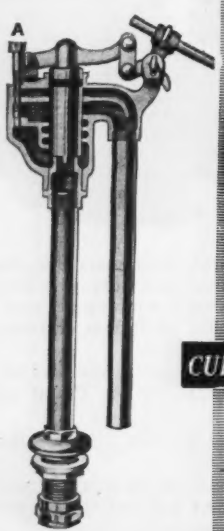
Down through the years CURTIN Tank Fittings have been a symbol of quality to the trade. For efficiency, minimum noise, low repairs, and economy in water consumption, you can't buy better.

CURTIN VICTORY VALVE



CURTIN VICTORY VALVE
(Re-filling)

All metal parts machined from cast bronze. Cylinder and overflow tube furnished in electrolytic seamless drawn copper. Metal encased leather seat washer. Will operate the largest closet with a minimum amount of water. Automatically refills any closet. No refill tube required.



CURTIN ROTARY BALLCOCK
(Bottom Supply for Low Tank)

Made from cast bronze, it gives maximum volume of water without noise on any pressure. By-pass regulator (A) assures quick refill of tank. Rotary control of water eliminates noise. The powerful compound leverage, together with the silent operation of this ballcock, recommend it for use on all important installations.

CURTIN ROTARY BALLCOCK

Furnished also in BACK SUPPLY TYPE, with integral stop.

SEE on Catalog Page DOMESTIC ENGINEERING CATALOG DIRECTORY

A. F. CURTIN VALVE CO.
76 SHIP AVENUE MEDFORD, MASS.

(Continued from center of page 212)

tenance of the operating efficiencies, it is said.

Designed for use in medium sized homes, the "400" series is also available as a boiler-burner unit. Abundant year 'round domestic hot water is available using the company's "Tanksaver" coil.

Item 15—Chemistone Fuel Oil Filters

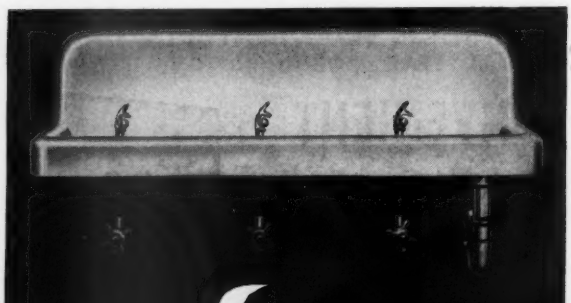
A line of fuel oil filters for central heating plants, space heaters, ranges and other fuel oil burning equipment was prominently displayed by Klemm Automotive Products Co. of Chicago.

Filtering out harmful dirt, sediment, abrasives, water and other foreign matter from fuel oil, the Klemm filters feature the "visible Chemistone element." It is thus easily possible to see what goes on inside the filter. The filter is efficient with either No. 1, 2 or 3 grade oil which meets the requirements of all normal conditions.

Item 16—Draft Controls

The Field Control Division of H. D. Conkey & Co., Mendota, Ill., featured its line of draft controls for all types of heating systems.

Among the controls displayed were the Type M for automatic heating equipment, Type R for space heaters and ranges; the "Barochek" for hand-fired furnaces and the Field Fuel Saving system. The latter is a new damper-motor set with automatic spring return, built-in limit control and booster fan switch.



Always install HAWS for Highest Quality and Complete Sanitation

Sanitary Drinking Fountains
Electric Water Coolers
Drinking Faucets, Equipment, Filters and Accessories

Easy to sell...simple to install. Long, trouble-free service assures customer satisfaction. Write for HAWS catalog today!

HAWS DRINKING FAUCET CO.
1441 FOURTH STREET Since 1909 BERKELEY 10, CALIFORNIA
Agents and Sales Representatives in All Principal Cities

"DUO" Principle of Sanitary Draining... *The cutaway view illustrates how the patented SANITARY WALL construction prevents drain water of one compartment from backing up into the other compartment — and it drains fast!*

Write for "Duo Waste" Catalog

Manufactured only by

M. S. Little

THE M. S. LITTLE MFG. CO. HARTFORD 6, CONN.

people will more and more

be seated by

A complete line of quality toilet seats

SEND FOR LITERATURE

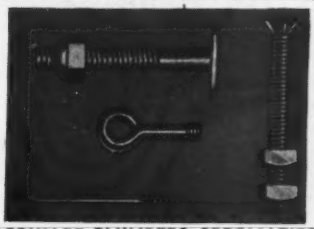
BEMIS MFG. CO.
Sheboygan Falls, Wis.

BEMIS

NOW Nationally Advertised in BETTER HOMES and GARDENS

PLUMBERS SPECIALTIES

Precision-made parts are essential to dependable work. Hindley has been noted for quality for over 50 years.



COTTER PINS • WIRE HARDWARE • PLUMBERS SPECIALTIES
ORDER FROM YOUR JOBBER.

HINDLEY MFG. CO.
VALLEY FALLS, RHODE ISLAND

BURKS WATER SYSTEMS Easiest TO SELL

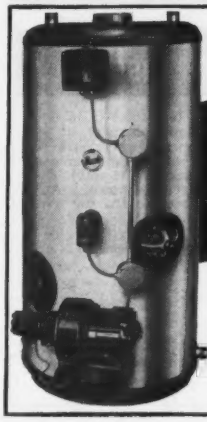
• SELF PRIMING
• FULLY AUTOMATIC

PROSPECTS WANT "LIFE-LOK" FEATURE

LIFE-LOK GIVES USERS UP TO 40% more years of efficient water service—it's plus value you can demonstrate. Only BURKS has LIFE-LOK.

Write for BURKS DEALER Proposition.

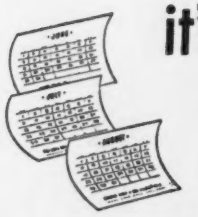
DECATUR PUMP COMPANY
33 Elk St. Decatur 70, Ill.



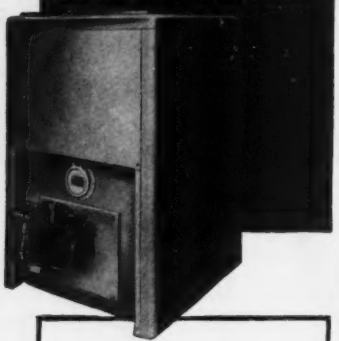
HEAVY DUTY OIL or GAS WATER HEATERS

For Literature and Prices Write

BOCK CORPORATION
Madison, Wis.



it's *Open Season* for selling oil heating equipment



Now **is the time to tie-in with Anchor . . . America's finest oil heating equipment. The product is right . . . the franchise is right . . . enabling you to make *more* sales, *easier* sales than ever before. Make this season an Anchor season . . . and bag *your* limit of oil heating profits. Write today for complete information.**

ANCHOR AIRE

ANCHOR DIVISION
STRATTON & TERSTEGGE CO.
Incorporated
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New Albany, Indiana

Free Consumer Literature with your name. **Attractive, 2-color literature for you to overprint with your firm name is available for you to distribute to your prospects.**

Equip Yourself

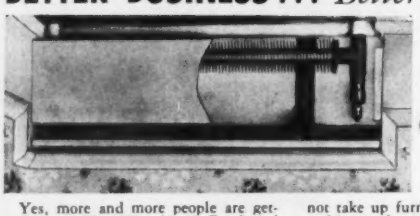
. . . with THE WORLD'S GREAT PACE SETTING PIPE CUTTERS

GENUINE BARNES

Renowned for their thorough world coverage, their complete acceptance by the plumbing trades, GENUINE BARNES Pipe Cutting Tools are, for very good reasons, the volume pace setters of the plumbing trades. For three thin, sharp, tough tempered, long-lasting cutter wheels cut all sizes of pipe with the greatest of ease, whenever or wherever you please . . . in the shop or in the field . . . in the deepest shaft or up in the highest building. GENUINE BARNES Pipe Cutting Tools are your assurance of doing a job as your customers wish it. ORDER YOUR BARNES TODAY!

The BARNES TOOL CO., Inc.
NEW HAVEN, CONN.

What Could Be **BETTER** *Than . . .*
BETTER BUSINESS . . . *Better Specify*



"Baseline"
FIN-TYPE BASELINE CONVECTORS
MORE PEOPLE WANT IT!

Yes, more and more people are getting to like "Baseline" Baseboard Convector heating. It's balanced, efficient, economical and clean. Does not take up furniture space. Fits any architectural mode. Affords full individual room temperature control. Heat regulated through dampers which deflect from wide open on down to 2/3 and 1/3 heat release. There's money in it for you. WRITE US FOR DATA TODAY. AVAILABLE FOR IMMEDIATE SHIPMENT.

Baseline MFG. CORP.
3117 N WASHINGTON AVE.
MINNEAPOLIS 11, MINN.

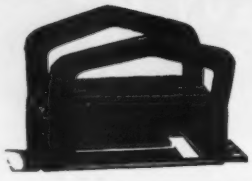
KAM

COPPER BOILERS

INDIRECT HEATERS **OIL HEATERS**
INSTANTANEOUS HEATERS **COPPER BOILERS**

KAM WATER HEATER MFG. CO., INC.
239-249 Alabama Ave. Brooklyn 7, N. Y.

IT'S *Tops* IN CONCRETE INSERTS !



The Carty & Moore Concrete Insert is "tops" because of its wide wing spread which gives it a stronger hold in the cement. It's "tops" because its travel slot permits wider adjustment. And it's "tops" because the nut cannot slip out.

Available in sizes for
⅜, ½, ⅝ and ¾ inch nuts

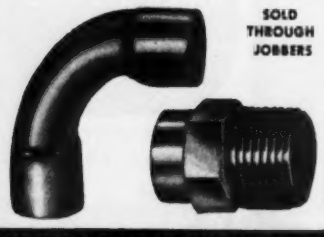
CARTY & MOORE ENGINEERING CO.
1150 W. Baltimore Detroit 2, Mich.

WRITE FOR LITERATURE

Eagle

SWEAT FITTINGS

SOLD THROUGH JOBBERS



EAGLE COPPER PRODUCTS CO., INC.
800 JOHNSON AVE BROOKLYN 6, N. Y.

Displays That Sell

(Continued from bottom of page 211)

displays to good displays through the use of emphasis. Yet, from all these examples the same three basic principles always evident:

1. Interesting displays create their own emphasis.
2. Build displays around one (or one type of) product.
3. All emphasis is no emphasis.

Next month, the third article of this series will try to show why one type of display may be successful at one time of the year, and be a failure at another—it will show how good timing is important for "Displays That Sell."

GAMA Convention

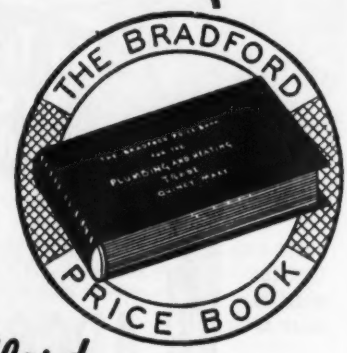
(Continued from bottom of page 110)

prevent any further cutbacks and to aid in boosting production and the allocation of available pipe supplies to the most essential products.

In addition to the speech by Mr. Hess, GAMA delegates heard technical and sales progress reports from various committees.

Other divisional meetings included a domestic gas range session, with W. F. Muhlbach; gas clothes dryer section, C. H. Rippe, Jr.; gas incinerator division, J. W. Hebert, and gas furnace and gas floor furnace groups H. M. Brundage and T. H. Smoot.

- IN ESTIMATING
- IN BUYING
- IN SELLING
- IN BILLING
- IN CHECKING INVOICES



Let Bradford be your Guide!

In making a practice of referring to the BRADFORD PRICE BOOK, you'll find quick, easy answers to your pricing problems. Be it a question either in plumbing, heating or sheet metal work, you'll find price data showing prevailing material costs . . . list, net and suggested selling prices. Contents: 450 pages divided into 24 sections. You'll find the BRADFORD PRICE BOOK a most valuable item of equipment in maintaining a successful and profitable business.

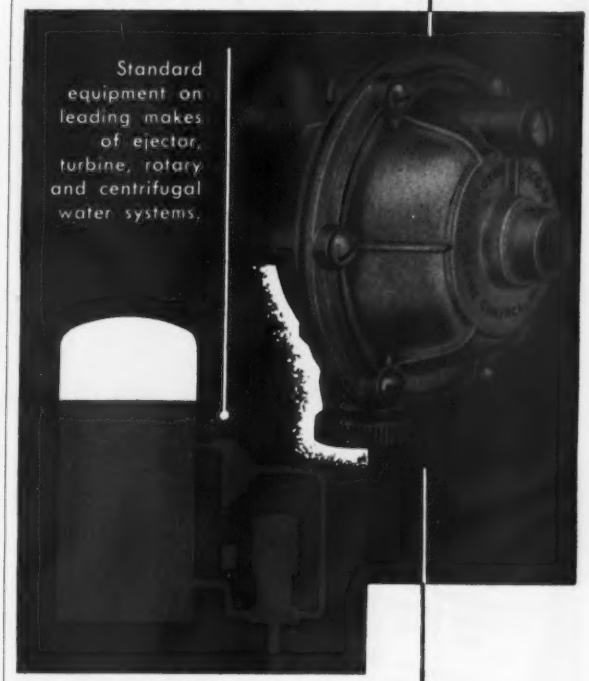
Subscribers use this valuable book to make sure that they are being allowed the latest market discounts and prices.

The WRITE FOR COMPLETE INFORMATION TODAY

BRADFORD PRICE BOOK

QUINCY 69, MASSACHUSETTS

2,300,000 in service for several years



A profitable market for replacement and repair parts is open to all distributors.

Brady

AIR VOLUME CONTROL

REPLACEMENT CONTROLS AND REPAIR KITS AVAILABLE FROM YOUR PUMP SUPPLY HOUSE OR JOBBER

Model No.	*Diam. for Identification*	*Max. Tank Size*
AV-25-3A	3" diameter (4-bolt)	42 gal.
AV-30-3A	3" diameter (5-bolt)	42 gal.
AV-42-3A	3 11/16" diameter	70 gal.
AV-80-3A	3 7/8" diameter	120 gal.
AV-120-3A	5 1/2" diameter	220 gal.

WRITE FOR LATEST BULLETIN

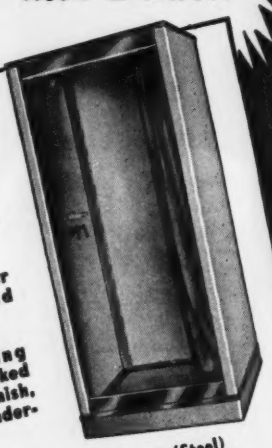
Brady

AIR CONTROLS, Inc. 1406 East 18th Street Muncie • Indiana

SUPERIOR

STEEL & ALUMINUM SHOWERS

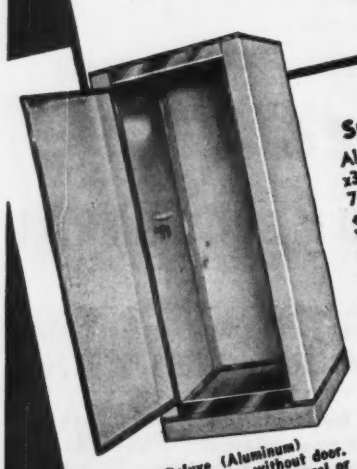
A Remarkable Achievement in Popular Priced Showers



1. Beautiful "Years Ahead" design in variety of models.
2. Simpler 30 minute installation.
3. Bolted construction for greater stability and longer life.
4. Life-time, non-rusting aluminum in white baked enamel or natural finish, also galvanized, bonderized steel.
5. Exclusive, double splash boards for extra strength and beauty.

Camper (Steel) 30"x30", 32"x32"

Regular (Aluminum) 18 gauge aluminum. Available in natural or white baked enamel finish. 30"x30", 32"x32".



Specifications

Aluminum sizes: 30" x30"x76", 32"x32"x 76", 36"x36"x76". 16 or 18 gauge walls. White or natural finish. Steel sizes: 30"x 30"x76", 32"x32"x76", white only. C.P. arm, head and valve. Choice of cast stone porcelain enamel, baked enamel steel, or non-slip aluminum receptor.

Deluxe (Aluminum) Available with or without door. 16 gauge aluminum. Natural or white baked enamel finish. 30"x30" 32"x32", 36"x36".

IMMEDIATE DELIVERY

Illustrated Catalog & Price List on Request

SUPERIOR SHOWER CO.

47-05 Fifth Street • Long Island City 1, N. Y.

Price Advertising

(Continued from bottom of page 168)

competitors. Jimmy Lutz of Harrisburg, Pennsylvania phrased the problem in this manner:

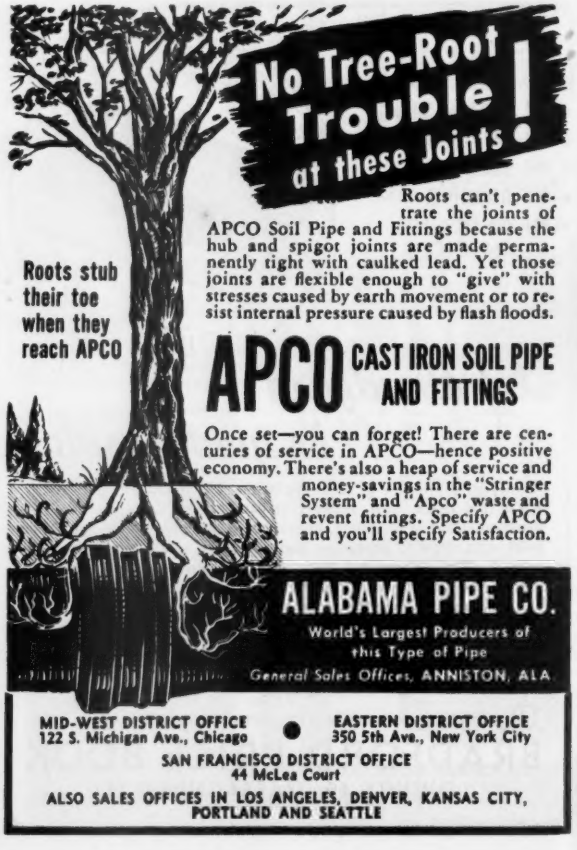
"We have been reluctant at times to advertise a product and attach a price tag to it in our newspaper advertising because our mark-up is not the same as our competitors and this fact alone has created very poor public relations for the master plumber.

"If a prospective customer is looking for, let's say, a three piece bathroom outfit, while visiting two or three plumbing stores he may find the same item shown at three different prices."

The end result of such a shopping tour, continues Mr. Lutz, would be that the customer would become skeptical of *all* plumbing prices . . . even the lowest one he saw. And there was considerable agreement on this point, with several readers commenting that they hoped that manufacturers would soon take steps to put suggested retail prices on merchandise so that "the dealer can use price advertising and be able to look his customers straight in the eye, knowing that his price is the same as his competitors."

Another group of readers felt that price advertising could not be used when the domestic en-

(Please turn to top of page 221)



No Tree-Root Trouble at these Joints!

Roots stub their toe when they reach APCO

Roots can't penetrate the joints of APCO Soil Pipe and Fittings because the hub and spigot joints are made permanently tight with caulked lead. Yet those joints are flexible enough to "give" with stresses caused by earth movement or to resist internal pressure caused by flash floods.

APCO CAST IRON SOIL PIPE AND FITTINGS

Once set—you can forget! There are centuries of service in APCO—hence positive economy. There's also a heap of service and money-savings in the "Stringer System" and "Apco" waste and revent fittings. Specify APCO and you'll specify Satisfaction.

ALABAMA PIPE CO.

World's Largest Producers of this Type of Pipe

General Sales Offices, ANNISTON, ALA.

MID-WEST DISTRICT OFFICE 122 S. Michigan Ave., Chicago • EASTERN DISTRICT OFFICE 350 5th Ave., New York City

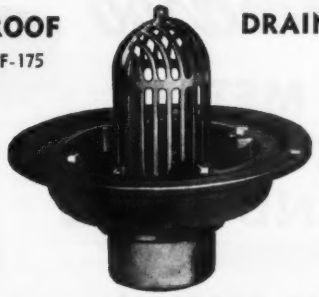
SAN FRANCISCO DISTRICT OFFICE 44 McLea Court

ALSO SALES OFFICES IN LOS ANGELES, DENVER, KANSAS CITY, PORTLAND AND SEATTLE

PLUMBING SPECIALTIES

AIR INLETS • AREAWAY DRAINS • ASH PIT DOORS • BACKS, BATH TRAPS • BOILER LEGS • BRACKETS • BOTTLE TRAPS • CAST HEATER COILS • CELLAR DRAINS • CESSPOOL CLEANOUTS • CISTERN TOPS • CLOSET COLLARS • DRAINAGE • DRUM TRAPS • ELBOWS • FERRULES FLANGES • FI • FLOOR DRAINS • GRATINGS • GREASE TRAP • GARAGE & GUTTER DRAINS • LADLES • MELTING POTS • TRAPS PEDESTALS • RETURN BENDS • ROOF DRAINS • SINKS • SEDI • SOIL PIPE SHOWER DRAINS • SUMPS • SPIGOTS • TEES • TILE STRAINERS • VENTS • VALVES • WATER BACKS

ROOF DRAIN
F-175



Caulk or Screw Outlet. Sizes 2" to 8".

The WILMINGTON CASTING Co.
WILMINGTON, OHIO

Ask for Catalog on Complete Line.

GRAY IRON CASTINGS

YAGER'S

. . . Soldering Salts and Paste will make you money!

Time saving, quality workmanship is a combination that can't be beat for its profitable angle on soldering jobs when you use YAGER'S Soldering Salts and Paste.

ALEX R. BENSON CO., INC.
HUDSON NEW YORK

YAGER'S assures fast fusion with no corrosion, no fumes or acid. Available in ½, 1, 5 and 50 lb. Containers. ORDER FROM YOUR WHOLESALER TODAY!

Safety SEWER ROD GUIDES

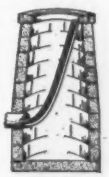
Labor Saving Cleaning-Tools

INCREASING Efficiency Tool for Contractors

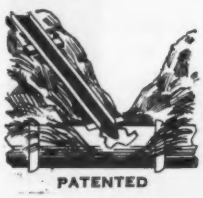
Reduces personal injury hazards to workmen. Sewers can be rodded in both manholes and open ditches without entering. Hand or power rods are operated through open channels. Stops and braces hold guide in rigid and stationary position. Tapered ditches prevent cave ins, as shown in illustration on lower left. Prevents rod from kinking and snapping.

Write today for particulars.

Phone: STewart 3-8626



PATENTED



PATENTED

FLEX MFG. CO.
7643 S. MARSHFIELD AVE.
CHICAGO 20. ILLINOIS

- **It's the BRASS Sump Pump.**
- **It's the pump primed with NEPTUNE rugged *performance features*. High in pumping capacity . . . high in sales appeal.**

NEPTUNE

PUMP MANUFACTURING CO.
4912 N. 6th St. Phila. 20, Pa.

FILTER *and* DIAMOND PURIFIER

Removes Chlorine, Odors, Suspended Matter, Discoloration

The Diamond Filter and Purifier actually *removes* objectionable substances and provides clear, sparkling, palatable fresh water.

WRITE FOR CATALOG

OSHKOSH FILTER & SOFTENER CO., Oshkosh, Wis.

SAVE PIPE CUTTING COSTS ON LARGE AND SMALL JOBS ALIKE!

Kalamazoo METAL CUTTING BAND SAWS

Models 816-S and 824-S. Capacity 8" round, 8" x 16" or 8" x 24" flat.

Model 610-S. Capacity 6" round, 6" x 10" flat.

EASILY PORTABLE!

BEST YET FOR SOIL PIPE CUTTING!

A Kalamazoo Band Saw beats other pipe cutting methods a mile — gives you *fast, clean, easy* cutting on the job — *at lower cost* with no burr, minimum kerf.

It's ruggedly built to last a lifetime — precision engineered throughout. Easily moved from job to job. Ideal for shop work. Many exclusive features make it today's top band saw value.

You just can't beat a Kalamazoo for lowest-cost soil pipe cutting, either. Cuts 4" soil pipe clean as a whistle in 2½ minutes — no chipping, no cracking, no pipe waste. All models use standard motor. Coolant equipment available. Write today for full details.

MACHINE TOOL DIV. Kalamazoo TANK and SILO CO.

631 HARRISON STREET, KALAMAZOO, MICHIGAN

STOP
BOILER TROUBLE

KEK For Dirty Boilers

CLEANS AND PREVENTS SCALE, OIL AND CORROSION.

REP The New Boiler Repair

PERMANENTLY REPAIRS LEAKS IN CAST IRON BOILERS—ODORLESS

Also Manufacturers of . . . KENBRIC Soot Remover, KENITE Joint Compound and KENITE Oil Pipe Plastic

KENITE LABORATORY
Madison New Jersey

Makes Any Fire Door A "SAFETY VALVE"!

INLAND Safety Door Closer For Gas and Oil Conversion Burners

Used by Thousands of Utility Companies and Contractors for Over 14 Years

Replace the regular boiler or furnace door hinge pins with the Inland Door Closer, file down the door catch and you have an extra "Safety Valve" on the job. Gentle spring tension allows door to swing open on slow or faulty ignition of burner and then close. Wedge holds door open when necessary. It's easy to install with the NEW SPRING HOLDER.

MADE IN 3/16"—1/4"—5/16"—3/8" DOOR PIN SIZES AND PRICED AT $1.00—$1.05—$1.10—$1.15

See your jobber or write us.

INLAND MFG. CO. 1120 N. CICERO, CHICAGO 51, ILLINOIS

TIT TUBE STRAPS COPPER

Made of solid copper for ¼", ⅜", ½" and ¾" tubing. Other straps, hangers, and hanger bars available in all sizes.

WESCO

WESCO (Tit) Tube Straps SAVE TIME; CUT LABOR COSTS. The quick, easy "SNAP-ON" feature leaves hands free to line-up and nail. Use WESCO Hangers on your next installation. You'll be amazed at your INCREASED EFFICIENCY.

**Ask Your Jobber for Wesco Hangers & Straps for Copper Tubing. Copper Straps are Still Available*

WESCO MANUFACTURING CO.
P. O. BOX 175 WELLSVILLE, OHIO

Less Selling Effort Needed WHEN YOU RECOMMEND KAINER HEATING SPECIALTIES

The Standard of **QUALITY** *for over 30 years*

There's always less selling effort needed when you sell KAINER . . . the name that for over 30 years has signified the best in heating specialties.

New folder on Governors sent upon request.

KAINER & CO. 761 LEXINGTON STREET CHICAGO 7, ILLINOIS

Price Advertising

(Continued from center of page 218)

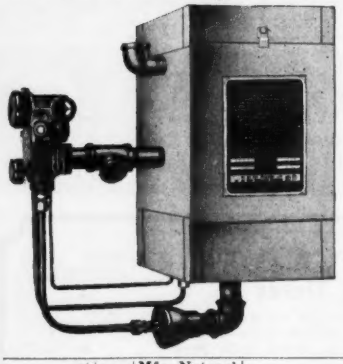
gineering dealer is facing cut-rate competition. "Price conscious customers (and what customer isn't price conscious these days?) will be apt to to go to the store that quotes the lowest price," says one reader.

Other readers, however, felt differently about this problem. One of them thought that even when faced with this type of competition the domestic engineering dealer should not hesitate to quote prices. The point being that the dealer can *quote a price that indicates the installation charge* . . . something his cut-rate competitor is not prepared to do. Also, the dealer has an additional advantage in that he can include a guarantee, or an offer for a year's free service, etc., and he has his reputation as a reliable, fully experienced firm to back him up.

And, as one reader summed it up, "Even a higher price is not always a disadvantage. People are always willing to pay more money for a better product. If that were not true, all the high-priced automobile manufacturers would be out of business tomorrow. Sometimes people *want* to pay more, for in this way they feel that they are assured of more value."

T-Dee ECONOMICAL LOW STAND BY

GAS WATER HEATERS
With the Replaceable Waterway



A long life, durable water heater, with the following features:

- Replaceable Waterway
  This exclusive feature enables one to clean quickly any lime or vegetation deposit in the line.
- From 18 to 90,000 B. T. U.'s Input
- For two temperature water
- Fast recovery

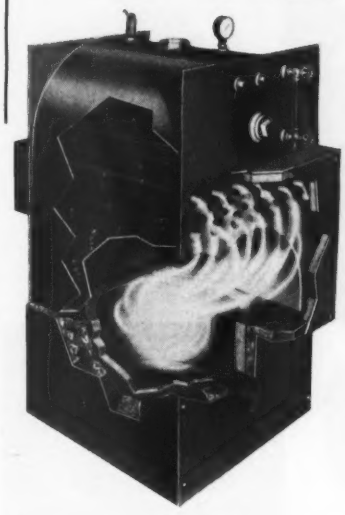
MODEL	TYPE	Mfg. Natural or Mixed Gas Input	Recov.*	Propane Input	Recov.*	Flue	Cold Con.	Hot Con.	Gas Con.	List Price
20 A5M	Manual	22M	18.3	18M	15.2	3"	3/4"	3/4"	3/4"	$ 25.00
40 A5M	Manual	45M	38.1	44M	37.2	4"	3/4"	3/4"	3/4"	38.00
20 A5	Automatic	22M	18.3	18M	15.2	3"	3/4"	3/4"	3/4"	55.00
40 A5	Automatic	45M	38.1	44M	37.2	4"	3/4"	3/4"	3/4"	100.00
90 A5	Automatic	90M	76.2	88M	74.4	4"	3/4"	1"	3/4"	150.00

*100° Rise per hour.

Heat Exchanger is of Steel Construction with Copper Lining.

DOWNS ENGINEERING COMPANY
SPRINGFIELD 3, MASS.

The PORTMAR



Windsor Series
Residential STEEL BOILER

Quality Features

Large Furnace Volume. Clean-out Doors both front and rear for easy cleaning. Highest Efficiency. Tastefully Designed Jackets. Large Domestic Water Tankless Coils.

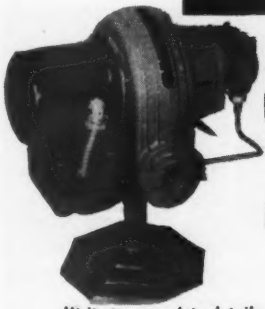
See Your Jobber About the Complete Line of Portmar Boilers.

BOILER SIZES

STEAM	WATER
From 400 to 900 Sq. Ft.	From 640 to 1440 Sq. Ft.

PORTMAR BOILER CO., INC.
193 - 7th STREET BROOKLYN 15, N.Y.

important OIL BURNER FACTS ABOUT **Radiant** THE SERVICEMAN'S BURNER



A nation-wide survey conducted by our advertising agency showed that

1. RADIANT burner performance is equal to the highest price burner. Yet they are priced to meet the lowest competition, even on project work.
2. Heavy sales are due to
   —low cost of upkeep
   —ease of installation and servicing
   —factory guarantee
   —national distribution in protected territories

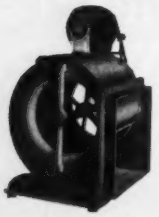
Write for complete details

New model equipped with shell designed combustion head

RADIANT UTILITIES CORP.
8817 18th AVE., BROOKLYN 14, N. Y.

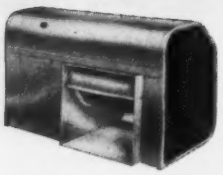
THIS YEAR AND EVERY YEAR...

REX
THE LINE THAT'S FINE ALL THE TIME



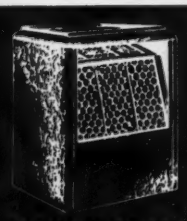
BLOWERS

Over a dozen models for standard applications. Able to make special units to meet manufacturers specifications.



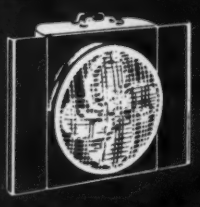
ALL-PURPOSE BLOWER

Portable. Low price. Washable filters. Quick installation. No grouting or cold air returns. Summer-winter operation.



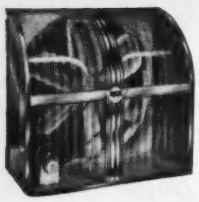
BLOWER-FILTER UNITS

Nine models. 700 to 6500 C.F.M. For all gravity warm air furnaces. Latest engineering developments.



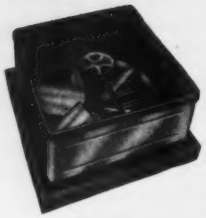
PORTABLE FANS

Three models for circulating and ventilating purposes. Used in windows, on walls or floors.



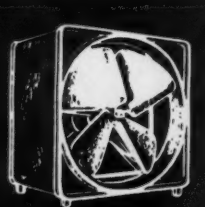
WINDOW FAN

Reversible ventilating fan for 4 to 6 rooms. Large capacity. Fits most windows. Easy to install.



ATTIC FANS

Four models horizontal mounted, vertical discharge type. Large capacities. With ceiling shutters.



VARIABLE-USE FAN

Ten models with unlimited application for domestic, commercial and industrial use.

Air CONTROLS INC
DIV. CLEVELAND HEATER CO.
2310 SUPERIOR AVENUE
CLEVELAND 14, OHIO

WRITE TODAY

Catalog or Specifications. If you're a manufacturer with Blower problems call us in.

SOLD THROUGH DEALERS AND JOBBERS ONLY

Case for Dehumidifiers

(Continued from bottom of page 139)

controlled atmosphere for their homes.

Dehumidifiers have many, many residential applications, and the domestic engineering dealer can tap a very lucrative market if he is armed with the facts to do a selling job.

The game or play room in the basement is a "natural" for the dehumidifier. Capable of drawing off the excess moisture in even the dampest of underground rooms, the dehumidifier can turn a cheerless, musty hole into a genial, comfortable living room . . . and at a minimum of cost and bother.

In this application, not only does the dehumidifier make the air more pleasant for living, but it protects furniture, wall-paneling and expensive equipment as well.

Basement apartment dwellers should also furnish a likely market. Also, such units find their application in beach homes, or cabins by small lakes and streams. In short, any living area in which excess humidity constitutes a problem is a spot where an alert domestic engineering dealer can place a dehumidifier.

Hobby shops, wood-working areas and storage rooms for valuable objects (such as works of art, furs, etc.) subject to moisture deterioration furnish additional outlets for this versatile unit.

Another market is that created by those individuals who suffer from certain types of respiratory diseases, and who must have dry, washed air at all times in order to maintain their health. Some sinus sufferers come under this classification.

The amateur photographer who has his dark room in the home also constitutes a potential market, for moisture control is important to him.

Photographs were furnished through the courtesy of the Frigidaire Division, General Motors Corp., and the Carrier Corp. Lines drawings were furnished through the courtesy of the Aqua-Sorb Corp.

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Kupferle has carried on through all the national emergencies of the last hundred years—a good name and a quality line to depend on in these times.

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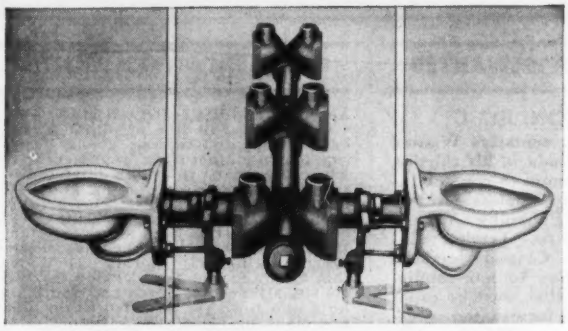

L-1565-SD and L-1565 SPD DOUBLE TY FITTINGS
These Blake fittings are particularly adaptable for installations having batteries of closets in a row. Made for both screw pipe and soil pipe—and for either Blowout or Syphon Jet Bowls. Again illustrating that, regardless of what your problem is on wall hung installations, Blake can take care of you.

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Handles locked in closed position as shown expand rubber rings, effectively sealing inside of tee, etc. for test. A few turns of handle and block assembly in open position lessens or increases expansion as desired. Guaranteed against defects. For cold water pressure only.

Style L-155
Double curved style—two sets of handles afford individual operation of each plug.

For further particulars, ask for Blake Catalog No. 16

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SHERWOOD BRASS WORKS, 6331 E. Jefferson, Detroit 7

SHERWOOD Ball Cocks

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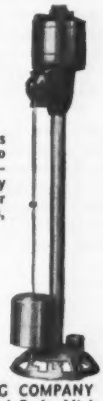

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MECHANICAL CONTRACTOR WANTS sales engineer. Mechanical contractor operating in Southeastern United States is in need of a Sales Engineer who is best qualified to consult with architects, engineers, contractors, suppliers and owners, particularly in reference to plumbing, heating, air conditioning and process piping. If you are looking for a future and good opportunity with one of the oldest and most reliable mechanical contractors in South, handling well over a million dollars annual volume, please write MECHANICAL CONTRACTOR, P. O. Box 36, Miami 37, Florida, giving personal history, education, previous and present employment and experience, references and additional information or remarks. All replies will be kept strictly confidential and present employees of the company know of the opening.

PLUMBING SUPPLY SPECIALTIES. Salesman with following only need apply. To call on hardware stores, plumbers, mill supply and lumber yards. We are a nationally known firm throughout the United States and have some openings for a few men in Metropolitan New York, New England, South and Midwest territories. Good proposition for the right man. Commission. Write territory now being covered. Replies confidential. Address Key 323-D, "DOMESTIC ENGINEERING," 1801 Prairie Ave., Chicago 16, Illinois.

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Manufacturers' Agents has openings for five aggressive salesmen to operate on a split commission basis. Our lines consist of Pottery, Soil Pipe, Steel Enamelware, Steel Cabinet Nipples, Seats, etc. Territories open:

1—Upper New York State
2—Philadelphia area and parts of New Jersey
3—Pennsylvania State
4—Maryland, Delaware, Washington, D. C.
5—New England States

Our present staff knows of this ad. Reply in detail. A personal interview will be arranged in your city at an early date. Address Key 304-D, "DOMESTIC ENGINEERING," 110 E. 42nd Street, New York 17, N. Y.

MANUFACTURERS' REPRESENTAtive known to the best trade desired for quality plumbing and mill supply and industrial specialties now being sold to quality trade. Repeat items, excellent commissions, exclusive territories open. Write full details in confidence. Address BOX 499, 221 West 41st Street, New York 18, New York.

REPRESENTATIVES WANTED

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Manufacturers' Representative Wanted Preferably a young man in his thirties, reasonably draft exempt, to contact Industrial Distributors, Wholesale Hardware Houses, and Plumbing Jobbers, on a commission basis. Territory includes Maryland, D. C., and Northern Virginia. No objection to non-conflicting lines. Man selected must be capable, cooperative, and furnish top references. Territory must be covered thoroughly every thirty days. We are a nationally-known and nationally-advertised manufacturer of pipe fittings. Write complete details to Key 293-D, "DOMESTIC ENGINEERING," 1801 Prairie Ave., Chicago 16, Illinois.

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REPRESENTATIVES WANTED

Complete line tubular, and cast brass plumbing goods, including pipe fittings, specialties, seats etc. We can deliver at prices that are competitive. High commission rate, with draw if desired. Exclusive territories open include North Texas, Oklahoma, Kansas, Missouri, Montana, Wyoming and Utah. Our present salesmen average more than $10,000 yearly income selling to the Master Plumber directly. Only experienced salesmen will be considered. Please give details in first letter. Address Key 314-D, "DOMESTIC ENGINEERING," 1801 Prairie Ave., Chicago 16, Illinois.

SALES REPRESENTATIVE WANTED: capable of selling our service to heating, air conditioning, and refrigeration trades. Also to national users of heating and refrigeration equipment. Long established midwestern firm. Repeat orders, commission basis, exclusive territories available. Very profitable for man able to handle this since it is a service to the trade very much in demand today. Address Key 295-D, "DOMESTIC ENGINEERING," 1801 Prairie Avenue, Chicago 16, Illinois.

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(2) West Virginia
(3) Southern Ohio, Kentucky and Southern Indiana

Written applications giving lines now handled and length of time in the territory will be appreciated. THE HUMPHRYES MANUFACTURING COMPANY, Mansfield, Ohio.

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AN ESTABLISHED BRASS MANUFACturer with full line of plumbers cast brass goods and tubular goods, desires capable manufacturers' representatives who can give thorough distribution through wholesale plumbing and heating jobbers. Seven territories are now open, namely: (1) New York State (exclusive of Metropolitan area) (2) Maryland, District of Columbia, Virginia and West Virginia (3) Florida (4) Wyoming, Colorado and New Mexico (5) Wisconsin, Minnesota, North and South Dakota and Iowa (6) Arizona, Utah, Idaho and Montana (7) State of Illinois. State qualifications and background. Our men know of this ad. Address Key 313-D, "DOMESTIC ENGINEERING," 1801 Prairie Ave., Chicago 16, Illinois.

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MANUFACTURERS' AGENT COVERing Metropolitan New York Area, including Westchester, Nassau and Suffolk counties. Am calling on all leading jobbers and can sell your products. Address Key 286-D, "DOMESTIC ENGINEERING," 1801 Prairie Ave., Chicago 16, Illinois.

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Classified ADVERTISING

LINES WANTED

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HUGH J. McGUIRE

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LINES WANTED

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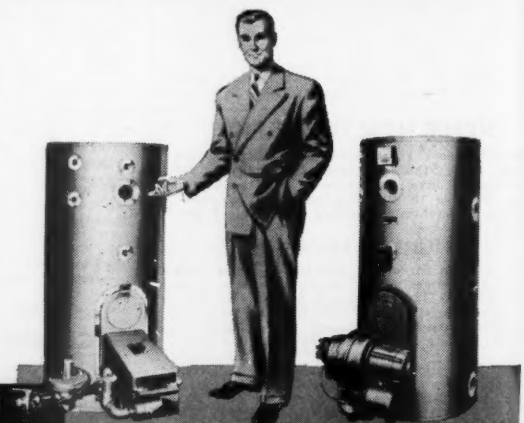

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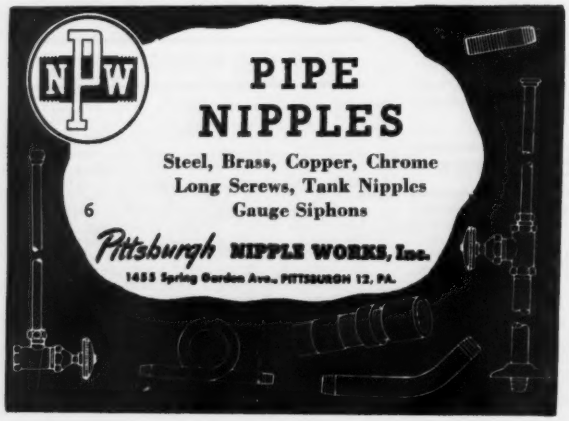

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(Continued from bottom of page 108)

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All this involves a gigantic plumbing job. Mr. Irving Kominski of Economy Plumbing and Heating says that when the work hits the peak he expects to have more than 100 men on the job at one time.

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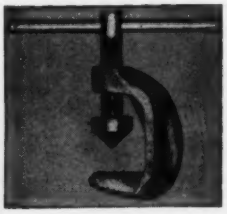
An area has been set up in a shed for welding, and some of the piping is then brought to the job partially fabricated. Material flow is controlled from the office on the job, with but a minimum of detail work ever reaching the central office in town.



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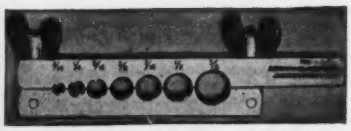

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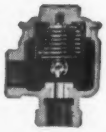

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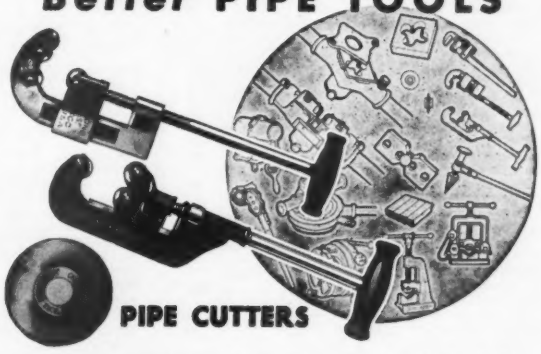

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"ARMSTRONG BROS." Knife Blade Cutter Wheels are machined from special alloy tool steel properly heat treated. They cut rapidly and easily, hold their keen edge.

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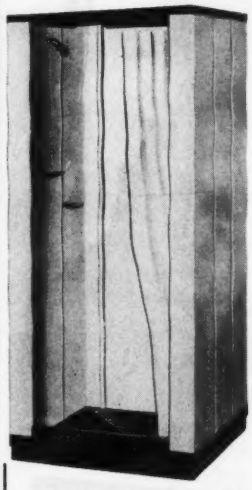

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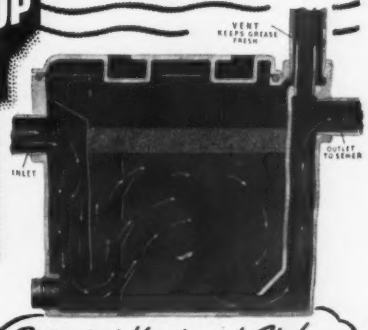

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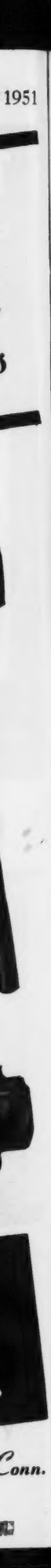

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